CONTENTS

JANUARY, 1926

Honey Markets		4- 5
Editorials		9-11
Southern Bees and Northern Honey	Dr. Ernest Kohn	12-14
Half Century of Progress	J. E. Crane	15-16
European Foul Brood	Dr. E. F. Phillips	17-20
Fireweed in the Northwest	W. L. Arant	20-22
Early Migrations of Honeybees	Ph. J. Baldensperger	22-24
Honey in the Home	Doris W. McCray	25
The Bees' Fuel Supply	Chas. N. Poling	25
Snowberry in Western Canada	W. J. Sheppard	26
Beekeeping in Philippines	J. D. Sullivan	26-27
More About Immunity	E. G. Carr	27
Immunity in Individual Larvae	A. V. Small	28
Siftings	J. E. Crane	29
From Foreign Lands	W. J. Nolan	30-31
From North, East, West, and South		32-37
Heads of Grain from Different Fields		38-39
Talks to Beginners	Geo. S. Demuth	40-46
Just News		41
Gleaned by Asking	Geo. S. Demuth	42-43
Bees, Men, and Things		44
A. I. Root's Story of His Life		45-46
Sour Honey Department		47-50

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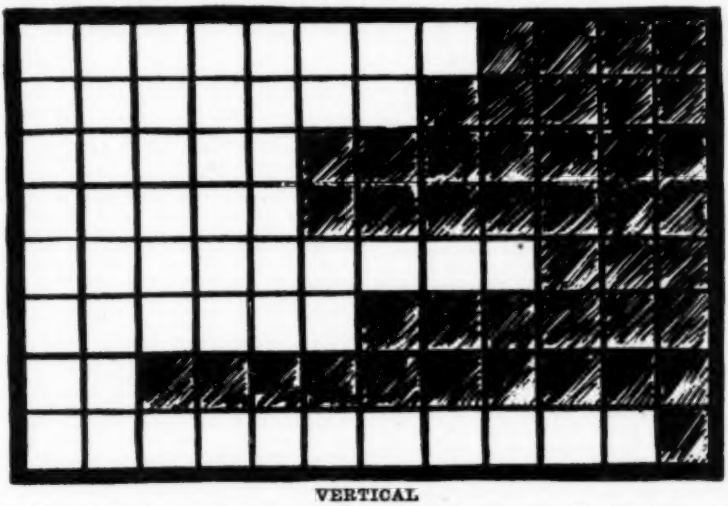
Try it, it's easy and it will give you some advanced information on an announcement to be made later. To all those using this page and working the cross-word correctly, or nearly so, we will send free one of our beautiful bronzed bee pins.

Pull up the chair now and let's see how good you are at working a cross-word puzzle for beekeepers. The correct answer will appear in next month's issue.



VERTICAL

1—The hero of Grecian mythology possessed of superhuman strength. (Get this one first and the rest is easy.)

HORIZONTAL

1—The name of Muth's new foundation (meaning strength, see vertical).
2—Meaning to record (plural).
3—How all hives should be setting. (Meaning firm.)
4—A place where honey is stored by the bees.
5—Opposite to equaled.
6—A good cheap winter packing for bees (found on the ground).
7—An abbreviation for the name Emma.
8—How foundation should be in order to produce maximum working comb.

Send us a list of your requirements for 1926 and we will quote you money-saving prices on quality supplies. Our low prices are based on only one grade of goods, the best. We have no second grade, for if low price is not backed up with quality it becomes expensive for the buyer.

Our 1926 catalog will be in the mails about January 20. If you are not on our mailing list, write today to have your name placed there.

We are paying the highest market price for beeswax. Write us for prices. Also send your old comb to us for rendering into beeswax—we pay the market price less 5c per pound on wax rendered for our labor.

THE FRED W. MUTH CO.

Pearl and Walnut Sts. Cincinnati, Ohio

HONEY MARKETS

U. S. GOVERNMENT REPORT

Information from Producing Areas (first half of December)

CALIFORNIA POINTS: Southern California—Rain continues to fall, and San Diego County reports 7 inches for the season to date. Scorched vegetation has taken on new life, and along the coast prospects are exceptionally bright. Some plants are already blooming, and the season promises to be very early. Concern is felt least heavy freezes later may damage the plants that have started into growth. Bees in Imperial Valley are in good condition. The honey market is said to be slow and buyers scarce. One car light amber alfalfa reported sold for 7½c per lb.; ton lots light amber, 8½c; small amount of light amber sage honey, 10c per lb.; ton lots white sage, 12c per lb. Beeswax is in demand, with sales reported at 30-36c per lb. Central California—Buyers report little or no movement in white sage, with ton lots quoted at 14½c per lb. Northern California—Some rain has fallen recently, but the rainfall is still slightly below normal. It is said that fully half the thistle crop has been sold. Two cars extracted thistle reported sold at 8½c per lb; 3 cars, 8c, one with cases to be returned; ton lots, 8½c per lb. Beeswax is very firm, with dealers offering 35-37c per lb. and some sales made between these figures.

PACIFIC NORTHWEST—The winter has been very mild and open thus far. Honey is in a little better demand, but prices show no inclination to advance. Few sales 60s white sweet clover and alfalfa, 10-12c per lb.; small pails, 12-14c per lb. A few carlots are being held for 11c per lb. Beeswax is in active demand at 30-33c per lb.

INTERMOUNTAIN REGION — Following cold weather in the early fall, the weather has since been unusually mild for this season of the year, although some sections report snow covering the ground. Occasional bees are restless in cellars, and some beekeepers are taking part of their colonies and packing them outdoors. Outdoor-packed bees have opportunity for frequent flights and in some localities can fly practically every day. Buds are said to be swelling on willows and other plants. One reporter advises that bees are actively gathering juice from frozen apples, which may be detrimental later in the winter. The demand for honey in large lots is quiet, but local sales are cleaning up honey in numerous areas. One estimate is reported to the effect that fully three-quarters of the honey in the Intermountain region is out of the hands of the producers. A few carlot sales of white sweet clover and alfalfa reported at 8½-8¾c per lb., but most holders are asking 9c per lb. or more; carlot sales of amber extracted reported at 8-8½c. Ton lot sales white sweet clover and alfalfa made at 8½-12c, mostly around 10c per lb.; 60s, 10-12½c; small pails, 12-14c per lb.; light amber, ton lots, has sold at 10-11c per lb. Carlots of white comb have sold lightly at $4.40 per case for fancy; $4.00 for choice; one car of light amber comb sold at $3.50 per case. A few cases light amber, off grade, sold at $3.00-3.50 per case. Beeswax has strengthened, and is now bringing 32-35c per lb. in cash or several cents higher in trade.

TEXAS—Recent heavy frosts have killed honey-producing plants. Colonies generally are supplied with young bees, but stores are light. Some losses from starvation have already occurred. Considerable robbing reported by colonies which are without supplies. Except in northwest Texas, more rain is needed for horsemint and brush plants. Honey continues to be shipped in from outside the state to supply local demand. Few sales extracted in small pails at 11½c per lb. Beeswax, 35c per lb.

PLAINS AREA.—Heavy rains have fallen, with deep snow in some sections, and prospects are excellent for the clovers next season. Some cellar-wintered bees reported restless; outdoor-wintered bees have had frequent opportunities for flights. Not many sales reported. Ton lots white clover are moving at 10c per lb.; 60s, 11-14c per lb. Beeswax, 33-35c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES.—The weather has been mild, but not warm enough in the upper part of this section for bees to fly. Honey sales seem to be at the season's low point. A few beekeepers are buying from others to fill orders. Two cars white clover extracted reported sold at 9¾c per lb.; ton lots, 9-12½c; mostly, 10c; 60s, 11-15c; small pails, 12½-16c; few, 18c per lb.; light amber ton lots, 8½c per lb; buckwheat, small pails, 10c per lb. No. 1 and fancy white clover comb has moved all the way from $3.50 to $5.50 per case, mostly $4.50-5.00; No. 2, $3.00; buckwheat and other amber comb, $3.80-4.00 per case. Beeswax, 30-35c per lb.

NORTHEASTERN STATES — Cold and stormy weather has kept bees in the hives for several weeks. Except in the northern portion of the area, most of the honeydew honey was used up in breeding before the last flight, and most bees went into winter quarters in fine shape as to stores and numbers. Some report the bees to be in the best shape for wintering in 10 years. Along the Great Lakes, however, bees were so short in stores, due to heavy consumption during October and November, that some colonies in cellars had to be fed to prevent starvation. Extracted white clover has been cleaning up well, but buckwheat, both extracted and comb, is in little demand, and the large crop is being disposed of slowly. Ton lots white clover have sold at 9-11c per lb.; 60s, 11¾-13c; buckwheat ton lots, 7½-9¼c; 60s, 8½-10c; small pails, 11c per lb. Little comb honey reported sold during this period. Few sales No. 1 white clover reported at $4.25 per case; buckwheat, $3.00-4.40 per case, according to grade; one large lot mixed comb at $3.50 per case. Beeswax, 35c per lb.

SOUTHEASTERN STATES—Bees in Florida are in fair condition. They are not working now, but with nice weather they could gather some nectar from pennyroyal. Little honey remains unsold. Rain in Mississippi has been ample for a fall flow, and bees are going into winter with plenty of stores and young bees. Honey is moving well for the time of year, but there is considerable still on hand. Bees in Alabama have been quiet for some days, as killing frosts have finished the asters and bitterweed. The supply of young bees is normal. Stores have been consumed heavily in Georgia during recent weeks due to warm weather and resulting activity of bees. Bees in Louisiana are expected to remain quiet until March. Sales reported of amber extracted in barrels at 7½c per lb.; in cans, 8½c per lb.; light amber, 60s, 11c; small pails, 12c; barrels, 10c per lb.; white sweet clover, small pails, 13½c per lb. Bulk comb, small pails, 12½c per lb.; 60s, 9c per lb. Few cases, white sweet clover comb moved at $4.50 per case. Beeswax, 30c per lb.

From Producers' Association.

The Canadian honey market is steady with a good demand domestically on account of the wonderful quality of our 1925 crop; the export market, fair. Our Canadian crop this year will amount to about 21,000,000 pounds, every province showing an increase in production, with perhaps the exception of Quebec, where we understand they just have an average crop this year.

Ontario Honey Producers' Co-op., Ltd.,
A. G. Halstead, General Manager.
Toronto, Can., Dec. 10.

Special Foreign Quotations.

LIVERPOOL—We have no change to report in the trend of the honey market. It has continued steady with a quiet demand at about the prices last quoted, namely, 13c per lb. in American money. There has been a fair demand for beeswax at steady prices, with a firm tendency. The price is about 42c a lb. in American currency. Taylor & Co.

Liverpool, Eng., Dec. 4, 1925.

Report of Actual Honey Producers

Early in December we sent the following questions to actual honey producers:

1. What per cent of the honey produced in your locality has already left the hands of the producers?
2. At what price has honey been sold, if any, in large lots (specify if this was in carload or less than carload lots) in your locality during the past month? (a) Extracted honey, per lb.; (b) Comb honey, fancy and No. 1, per case.
3. What are prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case?
4. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy, and No. 1, per section?
5. How is honey now moving on the market in your locality? Give answer in one word as slow, fair or rapid.
6. How much of this season's crop is being sold locally in your locality? Give answer in per cent.
7. What is your estimate of the prospects for 1926, considering the present condition of the bees and the honey plants, as compared with a five-year average for your locality? Give answer in per cent.

The following answers were received:

State.	Reported by—	Per cent Sold.	Large lots. Ext.	Large lots. Comb.	Wholesale. Ext.	Wholesale. Comb.	Retail. Ext.	Retail. Comb.	Movement.	Local Sales.	Pros. for '26.
Ala.	J. M. Cutts	90			$.50		$.75	$.30	Fair	90	100
Ala.	J. C. Dickman				.90		1.10		Fair	100	85
Ark.	Jas. Johnson	80			1.00	$5.00		.25	Fair	80	75
Ark.	J. V. Ormond								Slow		75
Cal.	M. C. Richter	80	.14½				1.50		Slow	20	100
Cal.	M. H. Mendleson				1.00		1.15	.38	Fair	90	
Cal.	L. L. Andrews	75			1.00		1.25	.40	Slow	10	100
Cal.	M. A. Saylor	90	.08½	4.00	.70	4.80	.85	.25	Fair	50	100
Col.	B. W. Hopper	5	.10	4.00	.65	4.00	.75	.20	Fair	25	100
Col.	J. A. Green	15			.75	3.50	.95	.20	Fair	25	100
Conn.	Allen Latham	55			1.00	6.50	1.25	.38	Rapid	80	100
Conn.	A. W. Yates	60			1.00	7.50	1.30	.40	Rapid	100	100
Fla.	C. C. Cook	100	.08		.80		1.00		Rapid	100	90
Fla.	Harry Hewitt	98			.80		1.00		Rapid	90	100
Ga.	J. J. Wilder	90	.12½						Fair	75	100
Ida.	Dr. J. E. Miller	93	.08¾	4.00	.60	4.50	.78	.25	Fair	20	90
Ill.	C. F. Bender	85				6.00		.30	Fair	98	80
Ind.	Jay Smith	100					1.25	.35	Fair	100	100
Ind.	T. C. Johnson	75			.90	4.80	1.15	.28	Slow	75	
Ind.	E. S. Miller	40			1.00	5.75	1.25	.30	Fair	100	100
Ia.	W. S. Pangburn	50			.68	3.50	1.00	.20	Slow	20	75
Ia.	E. G. Brown	80	.10		.75		1.00	.28	Fair	20	100
Ia.	Frank Coverdale	75	.11		.75	3.75	1.00	.20	Slow	5	125
Ky.	P. C. Ward						1.25		Slow	95	50
La.	E. C. Davis	65	.08½		.75		1.00		Slow	25	100
Me.	O. B. Griffin	50			1.00	6.90	1.25	.35	Fair	75	90
Md.	S. G. Crocker	80			1.00	5.75	1.35	.33	Fair	90	100
Mich.	Ira D. Barlett	95			.75	5.00	1.00	.30	Fair	50	100
Mich.	E. D. Townsend	60							Fair	75	
Minn.	Francis Jager		.10	3.75	.62	3.75	1.00		Slow	90	100
Mo.	J. H. Fisbeck	75			1.00	5.50	1.25	.30	Fair	100	65
Mo.	J. M. Romberger	75	.14	4.80	.80	5.00	1.00	.28	Fair	80	100
Neb.	J. H. Wagner	50	.11		.70	4.00	1.00		Fair		
Nev.	E. G. Norton	50	.08½	4.50	.45		.50		Fair	5	
N.Y.	N. L. Stevens	75	.11		.75		.85	.25	Slow	5	100
N.Y.	Geo. B. Howe	90	.11½		.75		1.00	.28	Fair	50	75
N.Y.	F. W. Lesser	85	.10¾	4.80		5.00		.28	Slow	5	125
N.Y.	R. B. Willson	55	.11½	4.90	.85	4.90	1.20	.30	Fair		85
N.C.	C. L. Sams	90	.10		1.00	5.00	1.25	.30	Fair	75	100
N.C.	W. J. Martin		.10	4.50	1.00		1.25	.35	Fair	75	100
N.C.	C. S. Baumgarner	100			1.00		1.25	.30	Fair	100	100
Ohio.	R. D. Hiatt	75			1.05	6.00	1.35	.35	Slow	100	85
Ohio.	Fred Leininger	75	.09½	4.50	1.00	4.80				10	
Okla.	Jos. Heueisen	100					1.35	.35	Fair	100	80
Okla.	C. F. Stiles	100			.90		1.10	.33	Fair	100	70
Ore.	H. A. Scullen	25			.78	5.50	.95	.28	Fair	100	100
Pa.	D. C. Gilham	25			1.05	7.20	1.40	.40	Slow	100	
Pa.	Harry Beaver				.70	3.50	.80	.20	Fair	2	80
S.C.	E. S. Prevost	100					1.00	.35	Fair	100	60
S.D.	L. A. Syverud	75		4.25	.70	4.80	.90	.25	Fair	75	80
Tenn.	J. M. Buchanan	100					1.25	.35	Slow	100	
Tenn.	G. M. Bentley	90			1.00		1.35		Fair	100	75
Texas.	H. B. Parks	100	.11		.68		.90		Slow	15	80
Texas.	J. N. Mayes	90	.10	7.40	.55		.70		Rapid	25	75
Utah.	M. A. Gill	90	.08		.50		.60	.20	Fair	20	100
Vt.	J. E. Crane	90	.13	5.25	1.00	6.25	1.25	.35	Slow	2	100
Va.	T. C. Asher				1.05	6.00	1.25	.30	Fair	50	95
Wash.	W. L. Cox	60	.10		.78	5.00	1.00	.30	Fair	50	100
Wash.	G. W. B. Saxton	30			.60		.75		Slow	15	100
W.Va.	T. K. Massie	100			1.00		1.20	.35	Slow	100	70
Wis.	N. E. France	40			1.08	5.70	1.25	.30	Fair	75	100
Wis.	E. Hassinger		.11		.80		1.00		Fair	40	100
Wis.	H. F. Wilson	50	.09¾		.70	4.63	.85	.33	Slow		100
Wyo.	A. D. Brown	75	.08½			5.00	1.00	.35	Fair	20	105

XUM

FRICTION-TOP PAILS AND CANS

2½-lb. cans—25, $1.30; 50, $2.40; 100, $4.15; 200, $8.25; 500, $20.00; 1000, $39.00.
5-lb. pails—25, $2.00; 50, $3.50; 100, $7.00; 200, $13.75; 500, $33.00; 1000, $64.00.
10-lb. pails—25, $2.90; 50, $5.00; 100, $10.00; 200, $19.75; 500, $48.00; 1000, $94.

GLASSWARE

8-oz.—Per case, $1.05; 10 cases, $10.00; 30 cases, $28.50. 16-oz.—Per case, $1.35; 10 cases, $13; 30 cases, $37. 32-oz.—Per case, $1; 10 cases, $9.50; 30 cases, $27.

A GRADE TIN PASTE—1 pint, 25c; 1 quart, 45c; postage extra.

Beeswax Wanted.

M. H. HUNT & SON, LANSING, MICHIGAN

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5-lb. friction-top pails.....per 100, $7.00; per 200, $13.00; per 500, $30.00
10-lb. friction-top pails.....per 100, $10.00; per 200, $19.00; per 500, $45.00

F. O. B. Chicago and Detroit

60-lb. cans, cases of two.....per 10, $11.00; per 25, $25.00; per 100, $95.00

F. O. B. Grand Rapids

½-lb. glass jars.....per 2 doz. case, $1.00; 10 cases $ 9.50
1-lb. glass jars.....per 2 doz. case, $1.25; 10 cases, $12.00

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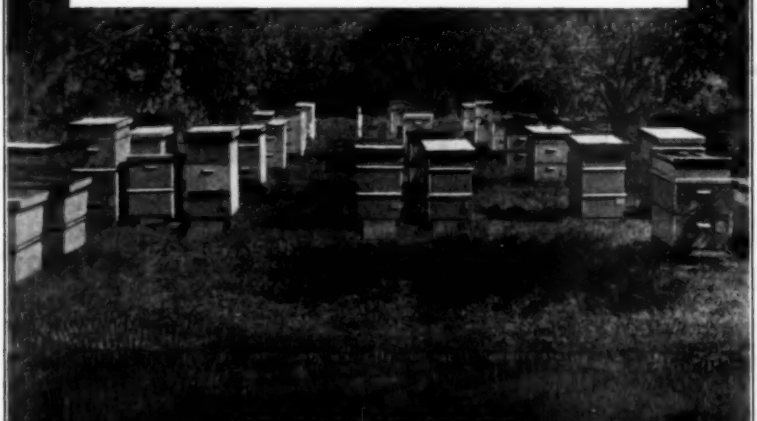
This is the opinion of A. A. Augenstein of Dakota, Illinois, whose picture, and that of one of his apiaries, is shown here. With an 80 acre farm to manage he must take advantage of labor saving improvements. Mr. Augenstein is not only a good farmer but also a successful beekeeper and his opinion is commonly shared by beekeepers whose first business is the farm.



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GLEANINGS IN BEE CULTURE
JANUARY, 1926

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

Different Types of Locality

THE great increase in the acreage of sweet clover in some portions of the white-clover region has made it necessary for beekeepers to modify their management to fit the new conditions. Those who have been accustomed to a short heavy honey flow from white clover and alsike clover, often stopping suddenly early in July and followed by a dearth of nectar during the remainder of the season, find that the management they have worked out for such a honey flow may not give best results when the honey flow from sweet clover extends through July and August. Keeping up the strength of the colonies throughout the longer honey flow presents a new problem to those who have spent years in working out methods to have their colonies in prime condition for a short early honey flow. Their problem now becomes somewhat similar to that of the beekeepers in the sweet clover and alfalfa regions of the West. When it is remembered that some localities, especially in the South, present a still more complicated problem because the colonies must be ready for several honey flows with periods of dearth between, it is not surprising that beekeepers do not always agree as to methods of management. While the fundamental principles of management are the same for all localities, differences in the time and duration of the main honey flow or honey flows make it necessary to vary the management to suit the different types of locality.

Embargo on Bees on Combs

THE regulations in several states requiring that bees brought in from another state must be accompanied by an inspection certificate or that they be inspected on arrival, and especially the quarantine against bees on combs in a few of the states and in Canada, present a serious problem for shippers of package bees and nuclei, as well as beekeepers who purchase bees outside the state. Shippers must keep themselves informed as to the regulations in each of the states into which they may ship bees, and the beekeeper who purchases bees from another state should be informed as to these regulations before placing his order.

For this reason this journal has collected and published information concerning these regulations from time to time, being careful to obtain first-hand information from the proper authorities wherever possible. In our December issue the states which prohibit the importation of bees on combs were given in a brief editorial note on page 800, which has resulted in several communications from Texas conveying the information that that state does not prohibit the importation of bees on combs that are properly certified. Our information regarding Texas was obtained from the office of the State Entomologist for that state in April, 1925, when a list of questions was sent from this office to the various state officials to obtain information for our "Who's Who" page published last May, and we had no reason to doubt its correctness. However, it appears now that the shipment of bees on combs into Texas is not prohibited provided they are properly certified, nor has there been such a prohibition at any time.

After making this correction the list of states which prohibit the shipment of bees on combs into the state is as follows: Alabama, Arizona, California, Montana, North Dakota, and Wyoming. The states which have regulations permitting

XUM

bees to be shipped into the state when certain conditions are met as to a certificate of inspection are Florida, Massachusetts, New Jersey, New York, Pennsylvania, South Carolina, South Dakota, and Washington. The remaining states have no such regulations.

It should be noted that one group of states prohibits the shipment of bees on combs into the state regardless of whether the shipment is accompanied by an inspector's certificate; another group permits the shipment of bees on combs into the state only when accompanied by an inspector's certificate, while the third group has no regulations covering the importation of bees on combs. These lists are in accordance with information in this office at the present time. If they contain any further errors we wish that our readers would notify us, since we are especially anxious to have the list correct in every detail before the opening of the season for shipping bees.

Immunity to American Foul Brood

SINCE the publication of Prof. Lineburg's article in the November issue of Gleanings in Bee Culture, so many articles have been submitted on this subject for publication that it will be impossible to find room for them even if it seemed desirable to give the subject such great prominence in the journal. G. H. Cale states in the December issue of the American Bee Journal that John M. Bixler, at Corning, Iowa, has been experimenting along the line of immunity for several years, and quite properly throws out a word of caution regarding the danger of putting dependence upon possible immunity that may not exist. This journal has in its files an article written by A. V. Small, Augusta, Kansas, in March, 1923, describing his experiments in an attempt to develop immunity to American foul brood which has not been published for the same reason.

In the articles submitted, most of the writers have noticed evidences of immunity or at least partial immunity in certain colonies, and several report that such colonies have been able to clean out diseased combs without coming down with the disease at the time. Most of the writers further state that this apparent immunity can not be depended upon over a series of years.

There are so many factors that must be taken into consideration that it would not be safe to draw conclusions from a few observations in this matter. In some cases a careful reading of the article leaves the impression that the writer was dealing with European foul brood instead of American. It is well known that in some cases it is next to impossible to distinguish between these two diseases without having the sample examined microscopically by an expert. Again, it is well known that it is usually only a few colonies in a large apiary that find and rob out a diseased colony, so it is not safe to conclude that the colonies that do not come down with the disease are immune when such robbing has been going on. Furthermore, the disease does not spread through the hive with the same rapidity under all conditions. It sometimes happens that a colony will have only a few cells of disease during the season, thus suggesting at least partial immunity, but come down with a bad case of the disease the next season. Some have explained this on the theory that the diseased honey is covered up by new honey so that the disease does not spread until the old honey is used later in elaborating food for the larvae. Even if an immune or partially immune strain were discovered it might have so many undesirable characteristics in other respects that it would not be wise to perpetuate such a strain.

However, it has been demonstrated that diseased material that is greatly diluted can safely be fed to larvae without causing the disease, a surprisingly large dose of the spores of American foul brood being necessary to cause the death of the larvae. Since any larva is able to resist small doses of the organism which causes the disease, it is reasonable to suppose that the larvae of some strains can stand larger doses than others, therefore resistance to American foul brood should certainly be considered in selecting breeding queens. This is a matter that can be best worked out by experts in the colleges and in the bee culture laboratory at Washington; but beekeepers who find evidences of immunity in certain strains of bees should certainly breed from them, provided other characteristics are desirable.

Help Needed in Marketing Honey

THE condition of the honey market in Minnesota, as described by Francis Jager on page 34 of this journal, is typical of what often happens when a bumper honey crop has been harvested in any particular region. Minnesota is a good honey-consuming state, sometimes importing honey from another state to supply the demand; but when the bumper crop comes, the flood of honey results in a chaotic market such as Prof. Jager de-

scribes. Next season the bumper crop may occur in some other region and it may even be necessary for Minnesota to import honey to supply the demand.

While Minnesota and Wisconsin apparently have a large surplus of honey this season, many states have had a short crop and are therefore falling far below normal in their consumption. Apparently the 1925 crop of honey for the entire United States is only slightly above that of 1924, and general business conditions are said to be more favorable than last year, so there is every reason to believe that the 1925 crop of honey in the United States could be well cleaned up before any of the new crop is ready for market provided it is properly distributed. Thus the lack of an adequate system for distribution that would move the surplus from regions having a bumper crop to regions having a short crop has resulted in honey being sold at ridiculously low prices in some localities. The government market report of December 1, reporting the honey market conditions for the last half of November, states that some beekeepers are reported to be offering 60-pound cans of white honey at $5.00 per can retail. This is only 8⅓c per pound for the honey with the cans thrown in. In other words, honey is being sold in single 60-pound cans in a retail way for considerably less than eastern buyers have been paying in carload lots at far western points. When this condition is present over wide areas it can not help but depress the wholesale price of honey and make it difficult for wholesale dealers to dispose of their holdings without loss.

In some of the western states from which large quantities of honey are shipped annually the honey is being marketed to much better advantage than in states which are not usually exporting states. For instance, Colorado, Wyoming, Idaho, and Montana export honey every year and have, therefore, worked out a system of assembling cars of honey and finding buyers for them, while many eastern states, which may export honey one year and import it the next, are caught without a system of moving their surplus honey when such a system is most needed. Furthermore, not being accustomed to shipping honey through the general market, there is a lack of uniformity in grading and packing which results in a further disadvantage when it becomes necessary to market a portion of the crop outside of the state.

The Editor believes that co-operative selling of honey is not only feasible but highly desirable—in fact, almost necessary in those producing regions that ship out a considerable quantity of honey every year, unless the region is already taken care of by a well-established and reliable dealer. The most difficult problem will be in those states which export honey only occasionally. Ultimately some system must be worked out to take care of the problem in these regions.

In the meantime there is one method by which immediate relief may be had, and that is for every beekeeper who has already disposed of his crop immediately to purchase some honey and proceed to sell it in his locality. If every reader of this journal would purchase even one case of extracted honey from a beekeeper who has not yet been able to sell his crop, or from his local supply-dealer, then proceed to sell this honey in bulk or in 5-pound pails to his neighbors, the situation would be relieved in short order. January is usually a rather dull month for honey sales, but during the latter part of the month and during February larger amounts of honey are usually consumed. This is an appeal to every reader of this journal to go out and sell some honey instead of waiting for some one else to do it. Beekeepers who have sold their crop of honey should not find it difficult to sell a little more. Business men who keep only a few colonies of bees primarily for pleasure should be able to disposed of a number of 5-pound pails of honey to business associates, and at the same time do them a favor by furnishing a delicious and wholesome sweet. Even the boy or girl beekeeper in an isolated and remote neighborhood can find buyers for a few pails of honey by a little extra effort.

Many of our readers would be glad to do this if the honey in bulk could be more easily obtained. By consulting the advertisements of honey for sale in the bee journals or by writing to prominent beekeepers in states having a surplus of honey this season there should be no great difficulty in obtaining a supply of high-grade honey. Also by writing to the local dealer in beekeepers' supplies these dealers may be induced to purchase honey in quantity to supply small lots.

Those who have already sold their crop of honey may wonder why they should feel under obligations to help out those who have not been so fortunate. It should be remembered that while the beekeeper is primarily concerned in selling his own crop he is also concerned in selling the crop of the nation and even the crop of the world, since the price he will receive next year depends largely upon how well this season's crop is marketed. Why not have a great drive during the next two or three months in selling honey so that we may start with a clean market when the new crop is ready?

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SOUTHERN BEES and NORTHERN HONEY

By Dr. Ernest Kohn

A Solution of the Wintering Problem and the Elimination of Useless Consumers

Several years ago some writer in this magazine predicted that the time would come when northern beekeepers would kill their bees after the honey flow, and replenish in the spring by package bees obtained from the South. This prediction was made in the early years of the package business.

For several years we have been getting package bees each spring, and the amount of honey produced from these packages usually has compared very favorably with our wintered colonies. Last season we concluded to establish bees in the South for our own packages, and practice raising bees in the South and producing our honey crop in the North. We reasoned that the honey consumed by a colony during the winter, the depreciation of winter equipment, the labor saved in preparing the bees for winter, packing and unpacking, the elimination of winter loss and spring dwindling, and the expense of requeening, all together would more than pay for a package in the spring.

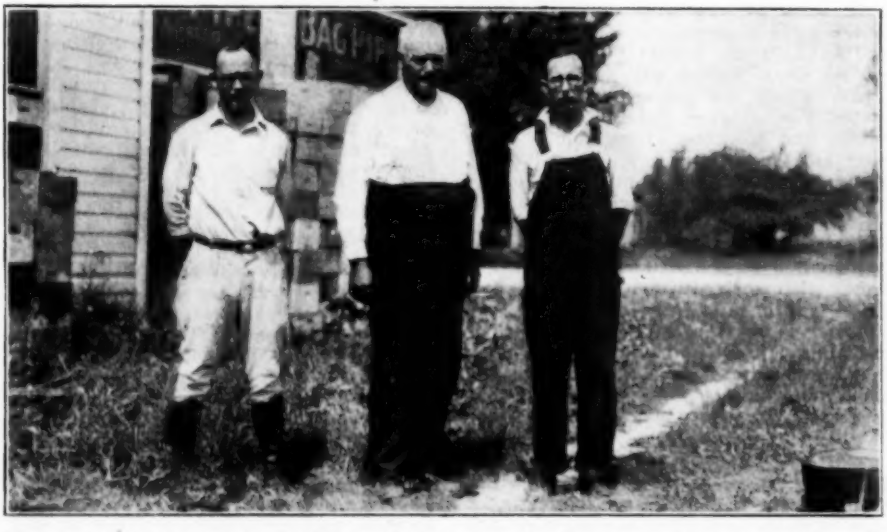
Parenthetically, a paragraph here to say that we wanted some excuse ourselves to go south each winter. Like our good friend, "Old Drone," we wanted more time for huntin' and fishin'. But we have found that the added work in the South has defeated this feature of our purpose. Furthermore, we now believe that packages may be purchased from reliable southern breeders cheaper than we can produce our own.

While we reared some of the queens for our own packages, we purchased most of them from near-by breeders. We thought it would be too expensive in labor and colonies to set out nuclei for mating one or two queens. Next season we expect to purchase all the queens we use.

Care of Package Bees on Arrival

The bees were sent to the North by express in two-pound packages, each with a spring-mated queen. All packages arrived from April 23 to May 1, inclusive. As we were located on a direct line into and out of Cincinnati, we had rapid and satisfactory express service. We had less than ½ of one per cent loss of packages on arrival, and only a very few had more than a dozen dead bees. Not more than three ounces of feed was consumed in transit.

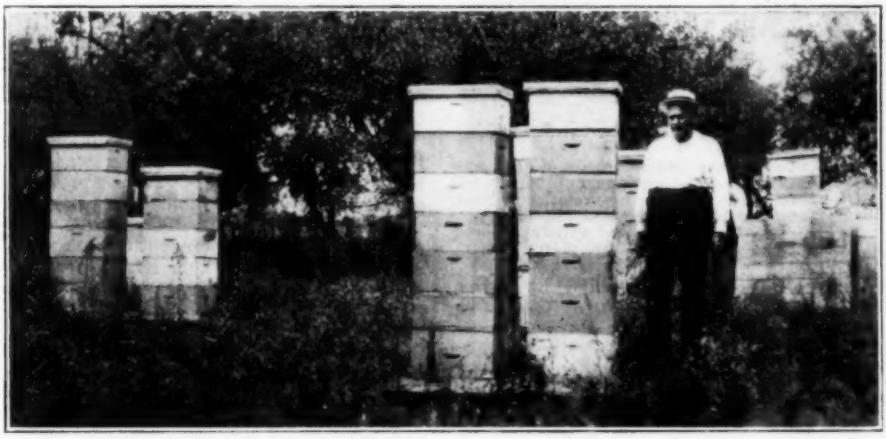
One comb was splashed full of syrup and given to the package at the time of transferring to the hive, and each package was given a total of 20 pounds of sugar in the form of 50-50 syrup as rapidly as the bees would take it down from inverted pails. This provided immediately plenty of feed till the bees were able to gather nectar for themselves. We now believe that it would have been better to



The men who did the work. Dr. Ernest Kohn, the man in the center, and his son at his right are the heads of the honey-producing firm of Dr. E. Kohn & Son.

have splashed the full twenty pounds into the combs at once, as it would have been quickly done and would have saved the bees considerable work.

The weather was cool and cloudy when the first packages arrived and we had no difficulty by releasing the bees directly in the hive, and puncturing the candy in the queen-cage so the queen could be released in a few hours. The next shipment arrived on a clear, warm day. We followed the same plan as on the preceding day, and the bees went through the hives and settled on a bush, not by the two pounds, but by the peck. We were busy till dark, capturing the swarms and returning them as best we could to the hives. We lost several queens and had the bees unequally divided in the hives. After this experience we thoroughly sprinkled the packages which arrived on warm days.



One of the apiaries of Dr. E. Kohn & Son as it appeared after half of the queens had been removed and the colonies united. In the spring two colonies were placed side by side, then in the latter part of June the queen of one colony of each pair was removed and the two colonies united.

Manipulation During Honey Flow

Let us consider two colonies, side by side, as a unit. About June 23 the queen was removed from one of the colonies and this colony was united with the other by the newspaper method. This made doubly strong colonies for the honey flow which commenced about June 20. The uniting caused absolutely no disturbance in any instance. June 23 was the time estimated after which eggs laid by the queen would mature into bees that would be "boarders." Of course, it is impossible to guess the exact date of the end of the honey flow; but in order to profit by this plan it is necessary to eliminate bees that will not earn their rearing and keep.

The remaining queen was on duty till July 9, at which time all queens were removed, and the unsealed brood was placed at the top of the hives, so it was an easy matter eight days later to destroy all queen-cells. We had estimated that the honey flow would be over about July 20, and by having a queen or a queen-cell till the end of the honey flow, the morale of the colony would be all that could be desired. We made a poor guess, as the late season prolonged the honey flow to a considerably later date. However, the bees continued to work very well.

A skeptical friend suggested that we leave a few queens in the doubled colonies to see if we would not get more honey by having a queen. He selected six pairs of estimated equal weight. Weighing the honey from these six pairs showed that the queen-right colonies averaged 22½ pounds more per colony. We are sorry that all these colonies were not actually weighed at the beginning of the test. Had we been better guessers as to the end of the honey flow we believe that these queen-right colonies would not have made such a better showing.

Bee-Escapes Fail to Function

At the close of the honey flow, when the honey was well sealed, we intended to escape the bees down one super at a time, and, as the population of the hive diminished, continue to double up and escape till all the bees died from old age. Our first attempt at escaping proved the fallacy of our reasoning: as there was no brood for the bees to go to, they would not leave the top super.

Extracting would have been delayed too long if we had waited for the bees to dwindle, and our plan was to eliminate "boarders." Torches were then made by dipping pieces of burlap in melted

sulphur. We first tried placing a lighted torch in an empty hive body and piling four or five supers over the burning torch. This required considerable time and labor, and we soon found that queenless bees resent any disturbance. We

At the close of the season, the old bees did not all die off according to schedule, so it became necessary to kill the few remaining ones that refused to leave the supers through the escapes. The kettle of melted sulphur shown at the right was used to saturate pieces of burlap with which to kill the older bees.

found an easy, quick method by using the sulphur-saturated pieces of burlap in a large smoker, closing the entrance with a burlap sack, and smoking in the entrance for a minute. In this manner two men could prepare and load forty-five supers in thirty minutes.

Advantages of This Method

(1) All colonies are headed with spring-reared queens, which certainly are more prolific than queens reared in the fall, or older queens. (2) There is no swarming, due to the queens being spring-reared. We did not see a queen-cell till after the last queen was removed. The queens were not a loss, as they were used in requeening in the southern yards. They, of course, were all tested queens, having seen only three months' service. (3) Winter loss and spring dwindling are entirely eliminated. (4) The colonies are all practically equal during the entire season, making what Mr. Demuth calls a level sky-line. On each visit to a yard the treatment or manipulation is the same to all colonies. (5) Elimination of a majority of "boarder bees." (6) Should American foul brood be found, these colonies can be left till the last, and after the honey is extracted, the combs may be treated and be ready for the next season. (7) Fishin's fine in Florida.

We have been asked numerous questions by our beekeeper friends during the season. The most important are: Do hopelessly queenless colonies work as well as queen-right colonies? Do queenless colonies plug up the combs with pollen? Do these colonies resist robbers? Do we consider this plan has been successful? Will we follow this plan next season?

We could not observe any difference in the work of the queenless colonies, although check hives showed that the queen-right colonies averaged 22½ pounds more to the colony. There was no apparent difference in what is termed the morale of the colony.

There was no noticeable difference in the amount of pollen stored. If a queen is caged the bees continue to bring in the usual amount, but if the colony is hopelessly queenless, the bees will gather very little pollen.

We did not have a case of colonies being robbed. The bees would protect their stores, but were free to attack any unprotected honey.

We consider this plan has been successful. Yards located where there was good pasture and sufficient rains produced good crops. One yard averaged 147 pounds to each two-pound package. Another yard with no honey flow after the alsike, and located where it was very dry all season, averaged only 35 pounds to the two-pound package. A good beekeeper in the same locality says his wintered bees did not do this well. We do not know of any yard in this vicinity that did better than our best yard, and we know of some fine beekeepers who had yards that did not produce a pound of surplus honey. Yes, we consider this plan has been successful.

Procedure to be Modified Next Season

Next season it is our plan to have a two-pound package with queen arrive April 10 to April 20. Two weeks later add two pounds without queen. About July 1 remove half the queens and unite as we did this season. At the end of the honey flow extract from all but two hive bodies, and winter this colony two stories high. The following spring equally divide the hive, combs, bees, and stores, and add two or more pounds of bees to each half or divided colony, giving a spring-reared queen to the queenless half. This procedure is to be repeated by removing the older queen about July 1, and uniting as before. By this method all colonies will be automatically requeened every two years with a spring-reared queen. This will eliminate the bad guess concerning the end of the honey flow.

Grover Hill, Ohio.

HALF CENTURY OF PROGRESS

By J. E. Crane

Inventions and Improvements Which Have Made Commercial Honey Production Possible

Fifty years ago we had the Langstroth hive, which is the foundation of all modern beekeeping; but a number of minor inventions have come since that have increased the value of the movable-comb hive many times.

One of the first of these, and one of the most important, is the bellows smoker, which was invented by Moses Quinby in 1873 and offered for sale a year later. What would we think today if we were to attempt to care for our bees without a smoker? Yet few beekeepers had such a tool for their work fifty years ago. True, we used smoke, but in a crude way. For the most part it was a roll of cotton rags or a stick of rotten wood with a little fire at one end and a red-eyed beekeeper at the other, who blew smoke at the bees. If he was successful in getting smoke on the bees before they were aroused, the bees would run; but if not, the beekeeper would often run—and sometimes pretty lively.

For smoke we sometimes used tobacco, but this sickened the bees much as it does the smart boy of ten or twelve years who tries to imitate his elders, and then bees from other hives were very liable to pitch in and rob them. We sometimes used dried puff balls. This would paralyze them and they would drop to the bottom-board as though dead; then we could pick out a queen, which was considered a major operation. After a few moments' exposure to the air the bees would come to and appear to be none the worse for their strange experience.

Invention of Comb Foundation

Another invention of great importance was that of comb foundation. The first practical comb foundation machine was finished by A. I. Root at Medina, Ohio, Feb. 26, 1876. I hardly need to mention the value of this invention. Modern beekeeping would hardly be possible without comb foundation. Securing straight combs was one of the arts of the early days. Many were the hives with combs built straight in the frames part of their length, and the rest of the way crooked, while in others they were built across the frames, and our movable frames became quite immovable. However, by shaping the under side of the top-bar to a sharp edge and raising the back end of the hive we could often produce combs that were movable. Sometimes we stuck thin pieces of comb on the under side of the top-bar to induce the bees to build straight.

Light-weight foundation has been of as great value for sections as the heavy foundation for the brood-chamber, giving the bees a large surface on which to work rather than the small starter of comb we had been giving.

Fifty years ago we saved very carefully all pieces of empty white comb, and cut it into pieces about an inch square; and, dipping one edge into melted wax, we stuck them to the under side of the top of our honey boxes about two inches apart, with the septum running in the direction we wished the combs built. Now we use thin foundation instead.

Development in Rearing Queens and Package Bees

Little was known by the average beekeeper fifty years ago about the artificial rearing of queens, while today many rear their own queens and most beekeepers know something of the art. Shipping of package bees from the South to the North to strengthen weak colonies or to build up new ones in the spring was unheard of in those days.

Use of Bees as Pollinators

The value of bees in the fertilizing of our common fruits was little understood fifty years ago, while today thousands of colonies are used for this purpose alone. The knowledge gained along this line has been of immense value to horticulture as well as to the industry of beekeeping. Several thousand hives of bees are used yearly in the state of Massachusetts in the production of cucumbers under glass.

The cranberry-growers of Cape Cod and New Jersey are dependent on bees for their crop of fruit. The stone fruits, such as peaches, prunes, and cherries, would scarcely pay for their care except for the work of bees. The value of bees in apple and pear orchards was unknown fifty years ago, but they were often thought to be harmful.

Section-Honey Boxes

The evolution of the honey-box is interesting. Sixty years ago a wooden box with a little glass in one end satisfied most beekeepers. Later glass boxes that would weigh when filled twelve or fifteen pounds came into fashion. Fifty years ago these were thought to be too large and a two-comb glass box about six inches long by five deep by four and a half wide was used. Many times, when removing such boxes, I have found one comb finished and the other not, when I wished I could separate them.

With the invention of the section my wish was realized. The first sections were

larger than the sections of today, and glass sides were added to them after they were removed from the hive. They would weigh about two pounds gross weight. All our honey was sold in that way in those days.

A. I. Root first suggested the 4¼x4¼x 1⅞" section in 1876, as one to weigh a pound. It was thought that bees would store much less in such small boxes, and doubtless they do store less; but by the use of light comb foundation we are able to get very good crops in these small sections today. Glass was also used on these new sections for many years, but this has been discontinued, paper cartons being used instead, which provide very satisfactory packages.

Comb honey was sold by gross weight in those days. Wood, glass, and honey were all weighed together, while today even the light wood rim of a section must be thrown out. But we sell now by count rather than by weight.

Changes in Comb-Honey Shipping-Cases

In 1868 and 1869 comb honey was shipped to market in dry goods boxes and even in barrels. Fifty years ago we were using a wooden case made to hold 50 pounds of honey. It was a little later that the size of a shipping case was reduced to about 25 pounds and has remained at that size ever since. The danger of breakage has always been present in shipping comb honey.

With the hope of reducing breakage the corrugated-paper shipping-case was introduced some twenty years ago. These cases have proved a decided success. They carry honey more safely, cost less than half the price of wooden cases, can be set up in one-third the time, and save freight as they are much lighter.

Getting bees out of the boxes was something of a task in those days. Usually we placed them in a large dry goods box and covered them with a white sheet, and as the bees collected on that we turned the sheet and so let the bees out and kept robber bees from getting in. Now we slip a bee-escape under our super and in a day or two our sections are nearly or quite free of bees.

Progress in Control of Brood Diseases

We had no out-yards in those days, but we had bee diseases then as now. My first experience with foul brood was as early as 1869. We did not then know the different kinds, but I was able to get rid of it by destroying every colony that showed even one cell of it. This disease was thought to be as incurable as leprosy. Today we recognize two distinct diseases: European foul brood, which can be controlled by the introduction of vigorous young Italian queens, and American foul brood, which can be cured by the shaking treatment, and the combs sterilized by the alcohol-formalin solution.

Improvement in Sources of Nectar

I believe that bee pasture is better now than it was fifty years ago. Then we had white clover, basswood, a little fruit bloom, and a little buckwheat. When these failed there was almost a famine. Today most of the basswood has been cut for lumber, but in the place of it our meadows blush with alsike clover. This clover, I believe, more than makes good the loss of our basswood.

Dandelions have greatly increased during the past fifty years, and are helpful in building up our colonies in May, and in some seasons give us some surplus. Sweet clover is also coming in quite freely on our clay or limestone soils.

Our markets have been greatly enlarged for both comb honey and extracted honey. Soon after the extractor began to be used in this country, D. W. Quinby, who handled comb honey in New York, wrote to one of our bee journals begging beekeepers not to send extracted honey to New York as there was absolutely no market there for any amount of it.

Today I suppose that market will take several train-loads of extracted honey without any difficulty. A person who was familiar with this trade told me a few years ago that the National Biscuit Company alone required 100 carloads of extracted honey in their baking plants each year. Honey absorbs moisture, and cakes with a certain amount of honey in them will not dry up like those sweetened only with sugar. Immense quantities of extracted honey are used for bottling or are put up in tins for table use.

There were few beekeepers' supplies fifty or sixty years ago. If a beekeeper wanted anything he had to make it himself, or hire some one to do so. We made all our hives and honey boxes.

The first honey-extractors made in this country were made by the beekeepers who used them. I made one in 1869, fifty-six years ago. It was a crude affair with which I extracted 240 pounds from one hive that same season. Mr. Quinby made one the same year.

Today we can buy everything we want from a ¼" nail or queen-cage to a perfect hive or a giant power honey-extractor ready for use.

We are living in a wonderful age. Greater improvements in beekeeping have been made in the past seventy-five years than in the previous six thousand years. The beekeepers of today may well feel that their lines have fallen to them in pleasant places, that they have a goodly heritage.

Middlebury, Vt.

EUROPEAN FOUL-BROOD TREATMENT

By Dr. E. F. Phillips

Important Facts Revealed by Study of the Early Struggles Against This Disease

To understand fully the present status of the treatment of European foul brood, it is desirable to study the various steps through which the beekeepers of the United States have passed in their work on this subject. Although most of the changes are well within the memory of many beekeepers, some of them have taken place so gradually as scarcely to be recognized. Such a study helps in understanding the changed point of view concerning this disease which is now almost everywhere held.

Early Method of Treatment.

Any historical discussion of the brood diseases and their treatment is incomplete without at least brief mention of earlier European work. Dzierzon's discussion of these diseases may be considered as typical of the older opinions. Dzierzon* states of "foul brood" that: "there is one kind that is mild and curable, and another kind malignant and incurable; both kinds are, however, contagious." The "mild" foul brood is obviously what is now called European foul brood. The treatment given is strikingly in accord with present views: "The curable kind may occur of itself * * * and sometimes disappears again of itself when the conditions have changed. But the beekeeper cannot with safety reckon on this favorable issue. *. * * To put a stop to the evil immediately, catch the queen without delay as soon as any foul-brood cells have been observed. * * *. Because there is now no more brood deposited in the stocks robbed of their queens, none can die and go bad, and till a young queen is reared, fertilized, and has begun to lay eggs again, the bees will have gained time, if they are still tolerably strong, to completely purify the brood-nest. They may be assisted in it by cutting the comb so close that the bees are able to cover it thickly." He discusses the use to which such colonies may be put and suggests the rearing of queens in them, but says that this "does not always succeed, because all the queen-cells may easily become foul." Here doubtless he was discussing European foul brood and the recommended treatment is at least eighteen days of queenlessness. Since this recommendation, so closely like one of the present remedial measures, was probably not a factor in the development of American methods, it need not concern us further.

* Dzierzon, Johann. 1882. Rational beekeeping. Translated into English by Dieck and Stutterd. London.

Appearance of European Foul Brood in New York

When European foul brood was first differentiated from the other "foul brood" in New York State, there was only one treatment commonly employed by American beekeepers for a brood disease, namely, the shaking treatment, now known to be applicable only for American foul brood. It must not be assumed that European foul brood was first introduced into the United States in Schoharie County, New York, in 1894, for a careful reading of earlier American literature leaves no room for doubt that this disease had long been present in certain regions especially favorable for its development. Various earlier American writers, following European writers, had advocated the use of drugs for brood diseases and there is every reason to believe that some of these men were dealing with European foul brood.

When E. R. Root and N. D. West* confirmed the belief, held by many New York beekeepers since the beginning of the outbreak in Schoharie County in 1894, that the disease with which they had to deal was not what we now call American foul brood, the belief in the universal application of the shaking treatment seemingly prevented at that time many experiments with the various so-called drug treatments. American foul brood had previously been epidemic in the Mohawk Valley and was familiar to many beekeepers of that section. (See Quinby's Mysteries of Beekeeping Explained.)

In the article by West to which reference is made, he states that if a hive-body containing diseased brood is placed above a queen-excluder over a "pretty good swarm," the diseased material disappears and no more of the disease is to be seen in that colony that season. This is true even though the lower hive-body also contains disease. He says that these colonies being made very strong are able to clean house. "Again, I have noticed that, in apiaries where large hives are used, and plenty of honey was in the

* Root, E. R. 1899. "The New Malady in New York probably not Foul Brood." Editorial in Gleanings in Bee Culture, XXVII, p. 858. See also the article by N. D. West in the same issue, "Foul and Other Forms of Diseased Brood in the State of New York," pp. 828-829. These two articles are the first known descriptions of European foul brood in the United States which made it certain that the disease encountered in New York was not the disease now known as American foul brood, then called simply "foul brood."

hives at all times, the bees suffer less than those in smaller hives, and which are rather short of honey.'' West says that some New York beekeepers have used drugs with success but he properly attributes this success to the fact that with the drugs sugar syrup was given freely. He also points out that the earliest brood of the year escapes with little loss, that the shaking treatment allows the disease to recur in half the cases, but, where the colonies are strong and where there is a honey flow at the time of treatment, the method gives good results. He describes the tendency of fairly strong colonies to clean out the disease when there is a good honey flow. One of the most significant statements of the entire article perhaps lies in the concluding paragraph: ''This (1899) has been the poorest honey season I ever knew, especially so in buckwheat localities.''

Even at this early date, West pointed out that European foul brood sometimes disappears without treatment, in which regard it is unlike American foul brood. It was also soon evident that the use of good, vigorous Italian stock is highly desirable in reducing the damage done by the new disease. It thus soon became a general practice to use Italian bees and to introduce Italian queens as a preventive measure as soon as European foul brood appeared in the neighborhood, although probably few beekeepers entertained the belief that the disease could wholly be prevented by the use of Italian bees. It was at that time the usual advice of the New York apiary inspectors to shake colonies showing the disease, just as is now done in cases of American foul brood. Great credit is due these inspectors for the advice and help that they gave to the beekeepers of the state, even before the present methods of control had been formulated. It is known that these men were responsible for certain experiments which later led to the formulation of a successful method of control by Alexander. They consistently taught that better beekeeping methods would do much to reduce the damage from this disease.

According to reports published in Gleanings in Bee Culture (XXII, p. 693) the year 1894 was a rather poor one in New York State. Some beekeepers reported a fair crop while others report the poorest ever known. It appears also that 1895 was ''not even as good as last year'' throughout the eastern United States; and one beekeeper in New York State (p. 596) reports it ''the worst I have had.'' In 1896 T. I. Dugdale reports (p. 607) that the season in New York has been so dry that there was nothing for the bees, at least until July 28. In 1897 Friedmann Greiner reports (p. 560) not one swarm in June and the honey season was ''not satisfactory.'' In 1898 Harry S. Howe reported (p. 660) that the crop of white honey in New York would not average two pounds per colony. It was during this period of short honey crops that European foul brood spread so rapidly through eastern New York State.

Experiences of Alexander.

The first great step in the change in the views of American beekeepers concerning the treatment of this disease came with the publication of the Alexander treatment* in 1905. In this article, Alexander advised that all colonies affected by the disease be strengthened and then that the colonies by being made queenless contain no newly laid eggs for a period of 27 days, during which time the bees will clean out the diseased material so completely that the disease is permanently eradicated. The article contained details of methods of getting the young laying Italian queen into the colony at the end of the twenty-seven-day period of queenlessness, and these details somewhat obscured the essential features of the article. When this article appeared the feature which strikingly attracted the attention of beekeepers was the period of queenlessness; and it was generally overlooked that Alexander insisted that all the colonies so treated must be strengthened. Doubtless some fault lies at the door of the author in not making this clear, but there is no doubt that he himself saw the necessity for this point.

The treatment was at once tried by beekeepers in all parts of the country who were being troubled with European foul brood and in almost every case they reported their inability to get the results obtained by Alexander. Doubtless some beekeepers failed because they, through improper diagnosis, tried the method for American foul brood. The apiary inspectors throughout the country were almost unanimous in condemning the treatment, chiefly because they saw in it elements of danger in the hands of inexperienced beekeepers. In a circular (No 79) on the treatment of the brood diseases, published by the Bureau of Entomology the following year, there was included a warning against untried treatments and this one was not given. The shaking treatment was advised for both diseases. There is no need at this time of reviewing all the criticisms of this treatment then made.

*Alexander, E. W. 1905. How to Rid Your Apiary of Black Brood. Gleanings in Bee Culture, XXXIII, pp. 1125-1127.

Experiences of Doctor Miller.

No further progress was made in the treatment for this malady until 1909. On June 15 of that year Dr. C. C. Miller, Marengo, Ill., sent to the Bureau of Entomology a sample of diseased brood which was diagnosed as European foul brood. In the first and also in later letters (June 29, July 5 and July 26) he makes the following remarks which have an important bearing on the results which he later obtained in the treatment of this disease. The following notes are quoted without the intervening connecting sentences: "Just now (June 15) it looks a good deal like a year of failure here. Very little white clover to be seen." (June 29) "First noticed it three or four years ago. But it didn't seem to increase. Last year except early in the season I'm not sure that we saw it at all. We had some idea it might be poison from sprayed fruit trees. * * * Until this year it was only in one or two colonies; and although we did more or less mixing of frames there was no spreading. Last year it disappeared entirely. Now, out of the first 30 looked through, only four were clean, although there might be only a cell or two in some of them. I suppose one difference is that last year honey was coming in a flood, while this year, up to June 22, there was a dearth." (July 5) "This is a year of failure, although there may be a late flow." (July 26) "Having lots of fun with foul brood. I feel pretty sure * * * that as you wrote * * * European foul brood is not ten times as bad as American foul brood. I'm sure it was here two years ago, but last year it did no particular harm This year it has weakened some colonies badly (lack of enough brood surviving to keep up strength) and early in the season we did our level best to spread it. The failure of the crop—bees not making a living now—is in some respects a great hindrance to handling the disease; and it is just possible that in some respects the short crop is an advantage." It may be stated that the "advantage" in this case came to beekeepers throughout the world from the fact that Doctor Miller had this opportunity to study the disease and its treatment, for his work has proved of inestimable benefit. During the year 1909 there was an unusual gathering of honeydew honey throughout the eastern United States, which indicated a general shortage of honey. Reports in the bee journals showed a scarcity of eastern honey in the markets.

Because of the importance of the experiments of Doctor Miller with European foul brood, it seems best to record in some detail and all in one place the various statements which he has made on this subject. The quotations are all, unless otherwise stated, from his writings in Gleanings in Bee Culture. The first public mention of the presence of the disease in his apiary was in an editorial note (XXXVII, p. 512). This announcement was delayed on the advice of the editor, who feared that such an announcement might work a hardship to Doctor Miller (from a letter dated July 5). In the September 1 issue (XXXVII, p. 524) he says that he has "had the fight of my life with black brood, and I'm on top." In his first article on this subject (XXXVII, p. 728) he states that he had 93 diseased colonies and 22 which showed no trace of it. The diseased colonies were brushed onto full sheets of foundation until it was seen that nine had deserted the hives. In all 56 colonies were put on foundation. To prevent absconding he later gave each treated colonly some partly filled sections; but as this plan was not quite satisfactory he next brushed the bees from all but one comb, leaving this at the side of the hive, with two entirely empty frames beside it and the remainder of the hive provided with empty frames. When a start had been made in building comb in the empty frames, the full comb was removed, the first frame of new comb was left and the remainder of the hive was filled with frames containing full sheets of foundation. In some cases the first comb was later removed, but not in all cases. The object was, of course, to have some comb in the hives to prevent desertion. This method did, however, have in it some of the elements of the treatment later employed. It will be evident that in these first cases, Doctor Miller was trying the usual shaking treatment, modifying it only as the peculiarities of the season seemed to demand.

In a later article (XXXVII, p. 760) this writer gives his experience in trying the treatment described by Alexander, which he did at the request of E. R. Root. He first noticed that, when he placed hives containing brood over a diseased colony, with a queen-excluder between, the combs above the excluder were cleared while disease still remained in the hive-body containing the queen. It must again be pointed out that there was a total dearth of honey at this time. He then tried changing the combs about later, giving the bees a chance to clean out the original brood-combs of their own colony, and these colonies remained healthy. "At least in some cases and under some conditions, a diseased colony with a queen may clean out combs over an excluder so that they will be entirely healthy." He then

summarizes the Alexander treatment as follows: "Make a colony strong; make it queenless, and let it remain queenless three weeks (see later remarks on this deviation); then give it a vigorous young laying Italian queen. That's all: the bees do the rest." He emphasizes the prime necessity for making the colonies strong and points out that a strong force of bees with a queen will clean out combs to which they, but not the queen, have access. This was suggested by West as early as 1899. He also varied the Alexander treatment by "giving the young virgin in 10 days rather than a laying queen at the end of 21 days," the reason being that bees with a queen will clean out the combs better than queenless bees. In commenting on the article the editor apparently did not see that Doctor Miller had greatly modified the recommendation of Alexander, which was to keep the colony without any egg-laying for a period of 27 days. The statement of Alexander on this point was as follows: "These (ripe queen-cells or virgins) are to be introduced to your diseased colonies on the twentieth day after you have removed their old queen, and not one hour sooner." (Gleanings, XXXIII, p. 1125).

(To be continued.)

FIREWEED IN THE NORTHWEST

By W. L. Arant

Hitherto Inaccessible Bee Pastures Now Becoming Accessible by Building Roads Among Mountains

When it is remembered that nearly one-half the standing timber of the United States is in Washington and Oregon, and that lumbering in these states is a steadily growing industry, it may well be estimated that fireweed will hold an increasingly important place in honey production in the Northwest. While the usual sequence—logging, fire, and fireweed—does not always hold true, yet it is the general rule west of the summit of the Cascade Range. The plant is a persistent grower and very widespread, and though exhibiting some seasonal variations and disappointments, often yields honey abundantly.

Seeds Scattered Far and Wide

Fireweed first came to my notice far from forest or lumber camp. A farmhouse in the Willamette Valley surrounded by cultivated fields burned one summer, and the next year there grew up in the ashes a crowded thicket of plants that proved to be fireweed. Examination of the seed pods revealed two noticeable characteristics: first, the im-

Apiary of J. E. Miller, Scappoose, Oregon, located in the fireweed region beyond good roads, but accessible by a logging railroad.

mense number of seeds; and second, their extreme lightness, which enables the autumn wind to carry them miles and miles. Thus the ashes of any forest fire are usually thickly seeded, and under favorable conditions bring forth a crowded growth of fireweed. It is a moisture-loving

A jungle of fireweed in burnt-over land.

plant, and attains its maximum growth along streams, and on the western slope of the Coast Range where the writer has seen it eight to ten feet high. This is due to the heavy rainfall, which in places exceeds 100 inches a year, the heaviest in the United States. Yet sometimes it can be seen farther inland on mountain slopes or plateaus, high above any stream, a solid mass of pink visible for miles.

With the express purpose of determining the present and future importance of fireweed as a honey plant in the Northwest, I undertook last summer an exploring trip through a typical big timber and lumber region, driving a Ford conditioned for all kinds of rough adventures. The 200 miles of mountain travel took me through dark shaded virgin forests, through dense thickets of brush, over sharp divides made bare and lonely by fire, among great patches of flowering trees and shrubs, along black mountain slopes recently burned, and finally where the rosy pink of the willow-herb held sway in its strange setting of blackened stumps and logs.

It probably is an axiom that fireweed locations valuable for commercial beekeeping fall into three classes: past, present, and future. In the first class are numerous patches where fireweed once reigned supreme, and still peeps out here and there from the brush and young trees that have almost crowded it out. In the second class are areas logged off from three to six or seven years ago, and here fireeweed is in its prime. Most of these localities are at the upper end of some short logging railroad that taps a region where no wagon road has been constructed. Some beekeepers have obtained transportation on these private railroads and established temporary mountain apiaries. In the third class are those districts where timber is now being taken out. These will probably be covered with fireweed in a few years.

Thrifty stalks of fireweed grow to a height of six to eight feet.

Why Territory is Not Yet Developed

Some of the drawbacks that challenge the winner at the present time may be enumerated. Often, we are told, no usable road reaches a prime district until brush has largely choked out the fireweed; that fire has killed all shrubs and trees that would furnish early nectar for building up the colonies; that the yield is dependable only in those places where rainy weather makes spring management difficult; that bears and other pests (human included) are sometimes troublesome; and that the beekeeper in a typical locality is in danger of losing his apiary by fire. Yet these represent only the problems that make success interest-

ing, and much may be said on the other side. Furthermore, the possibility of an occasional enormous crop keeps our fever stimulated a degree or two all the time.

One thing observed on the trip is significant. Road construction crews with steam shovels were passed in three or four places, and one rock crusher furnished material for macadam. Naturally, this is what we like to see. Some day the roads will be such that we can utilize more of these mountain honey flows, which come at a time when the bees in the lower valleys have gathered the season's crop, and can do nothing more there but loaf the rest of the summer. As it is, an aggregate of several carloads of fireweed honey is on the market every year, and the quantity is on the increase.

The Future of Fireweed Pasture

With the reforestation of mountain areas unsuited to agriculture, and the continued reservation of national forest areas, the permanence of the lumbering industry in the Northwest is assured. With this assurance comes the probability that even in the distant future fireweed will hold an important place as a source of honey; and because of its exquisite appearance and delicate flavor the market will come to recognize fireweed honey more and more as a distinct article of high merit.

A close-up of fireweed blossoms.

Hillsboro, Oregon.

EARLY MIGRATIONS OF HONEYBEES

By Phillip J. Baldensperger

Effect of the New Environment as They Spread from the Place of Their Origin

In conformity with the habits of hive bees first observed in logs of trees, man invented log hives for the bees. When bees live together with man for ages in fertile plains, with very short winters where food is abundant and flowers bloom most of the year, they do not gather more honey than is just sufficient for a bare living. For example, we have observed how the Egyptian bees in their warm country rear not over half a dozen frames of brood and gather not over ten to twelve pounds of honey, and how they make no preparation for winter. Also we have seen how the yellow bees carried over from Italy, selected and acclimatized in the northeastern region of North America, show a considerable amount of change in a relatively short space of time. These American Italians passed through successive changes, we must not forget, from their native islands in western Asia to the Italian peninsula, thence to America.

Migration Northward After Glacial Period

Man and bees both started or re-started after the long glacial period from the warm cradle of life to the colder regions. They both rapidly increased till they were overcrowded. Bees, probably long before man, advanced toward unoccupied honey regions. Man followed in the rear, carrying hives with bees in the original form with them, or simply followed the bees after they had adapted themselves to colder climates. As the South was overstocked, there was but one outlet toward the North through mountain passes, the natural way. Camels, elephants, cattle, and horses tramped along with man. The most indispensable furniture was loaded on animals, and bees were certainly among the luggage, else the name of the bee and the mead prepared with honey would have been lost. *Ara*, Turkish for bee, and mead, the honey beverage, are words which are still found in modern languages. Camels and elephants could not easily stand the colder climates and remained behind. Camels still are found in the Tartar regions, but do not occur in central Russia, therefore the word camel is not found in the Aryan-European dialects. The migration was

certainly very slow and often generations passed before a new advance was undertaken, until it was possible to forget the very sense of the original word. As long as the nomads lived in steppes and treeless regions, low hives of light materials were used, so that hives could be wrapped up in rugs or mats and thus loaded on the accompanying beasts of burden.

Before oil and coal were discovered, which led to all modern machinery and progress, humanity was never in a hurry. The slightest barrier, such as hills or a river, hindered the advance of man for fear of an unknown enemy beyond; but bees were not thus retarder. Flowers and sunshine were the eternal bait, and where no impassable mountain ranges or immense sheets of water intervened they advanced, showing man the way to follow.

Bees continued this northward flight in Asia and Europe. They first came to America in the rear of man, but after they were once established in this land where flowers grow they moved westward. The Indians knew that the "white man's fly" always preceded the white man. Like every living creature brought over to America, bees spread like wildfire till they were known all over the continent.

Bees Become Gentler in Northern Regions

Probably when man joined the bees in central Europe, the angry bees of Hindu-Kush, where enemies were more numerous, had modified their temper. Reptiles and predaceous insects decreased as they moved northward. Plants which secreted netcar rapidly, growing during short summers, increased, and long and cold winter months, where all vegetation goes to rest, taught bees to modify their habits and to store honey enough in their hives to bridge over the inhospitable seasons; and thus these cold winters taught them to group snugly together so as to be ready for the coming season, with the one purpose, namely, the preservation of the species.

The low hives now in use in Persia, Caucasian and Caspian regions, show the Indian and nomadic origin. Two hollowed-out trunks of trees, or pieces of stout bark of trees, carelessly fixed together and laid loosely on the ground, indicate that the nomads were always ready to pick up their hives and move away on short notice.

Beyond the Caspian Sea and the Caucasus, through the immense steppes where Cossacks, Kalmucks, and Kirghiz, all of central Asiatic origin, still linger in their most primitive way of living, the advance was very slow with man. Natural selection with bees produced more hardy and active races. Man became fiercer in his habits as he encountered wild animals and a climate more rigorous and severe. Neither man nor bees, inseparable companions, have been very much influenced by changes in climate. May we not conclude that the period of their arrival in central Europe is of a very recent date, compared with that of animals of the arctic region of southern origin, from untold ages earlier?

Color Influenced Less Than Behavior by Migration

Bees in central Africa or in central Europe are both scantily covered with hair. There are yellow and especially black bees about the great lakes in Africa, as well as in heather regions of northern Germany. Mental characteristics in man and bees have been equally influenced by climatic changes or topographical differences, as will be pointed out in the following pages. Not so as to color. Who can tell why negroes are black? It certainly has nothing to do with their residence in equatorial regions or else American residents at the equator ought likewise to be black. Red and yellow races of mankind exist over far-reaching countries, also the whites or Caucasians retain their color, though the history of the latter is better known, being of recent date. How long the yellow Esquimos have lived in Greenland is not known, but the period was not sufficient to influence the growth of hair. Evolution evidently is exceedingly slow. Men, either by choice or more often by necessity, modified their lodgings and their weapons or clothing. So did bees modify their habitations, influenced or forced to adopt the material found, according to the climate. Thus all over central and western Asia, Egypt, and Africa, humans are almost naked, or barely covered with clothes, and they live in huts or tents. As they advance toward colder regions they adopt warmer clothing and snug houses, till the Esquimo, in protecting himself against cold, hardly shows more than his face.

The bright-yellow Cyprian, in its island, will remain yellow as long as no dark blood is introduced, but it will retain its bad temper as long as its natural enemies, wasps, hornets, and lizards, remain in its environs. The black Malgache will remain black and angry as long as reptiles and depredatory insects abound and as long as no yellow blood is introduced; but they will certainly be influenced when, after a few generations, they have lived in countries where enemies and climate are completely changed.

The northwest Saharians, when wild, live in hollows about the cliffs of the mountainous regions south of the Atlas, or else are hived by Berbers in the oases

in hollows scooped out in the walls of their homes. As these bees have very few enemies in the dry region, they have become very gentle, though they will attack if rudely handled. Their isolation in different plains has induced the bees to fly miles beyond the usual distance that other honeybees fly. That the power of odor and the power of flight are so developed only goes to prove that they must have lived in their present seclusion for many centuries.

Effect of Environment Upon Type of Hive Used

In the same central regions south and west of the Mediterranean, hives are elongated and laid flat on the ground, or are suspended in trees to put them out of the reach of devastating ants which, in their ravages, clean up every available object. Because bees of these warm regions had no use for large stores of honey, the inhabitants, in conformity to those habits, furnished small, low hives. Because these low hives contained limited stores and bees could easily have been destroyed, the law-givers of those countries proclaimed bees divine in order to protect them.

The natives of central Africa carry their food and small articles in baskets prepared from the long blades of all kinds of grasses which abound about the great lakes and rivers. They also prepare hives of the same material having the same tubular form as all Egyptian hives. The natives of all those countries, from Abyssinia to the Zambezi or Congo regions, put their bees in such baskets, which they suspend on trees where honey will be out of the reach of ants, the principal enemy. The author was shown such a hive, brought from the Hyanza Lake region in 1922 by a British official who supposed that what was good for the negroes of that region was just as good for the inhabitants of Palestine, where modern frame hives have been introduced by the thousands by the Baldensperger Brothers since 1880, and which are wide-spread among the Jewish colonies and native Arabs.

As bees adopted bigger hives in bigger tree trunks, in which they stored enormous quantities of honey, their supposed divine origin sank lower until they became a prey to humanity. Bee diseases existed as a law of nature and developed more rapidly where beekeepers were careless. The form of hives, the quality of food, or climate could never be sufficient as an essential cause to create a single mite or bacillus. So wax moths are not created by combs of beeswax not occupied by bees, but they easily take possession of such. In northern countries, where wax was used to light the temples or used in sacrifices to the deities, beeswax was taken and bees began to be brimstoned. Larger hives standing upright were easily brimstoned, and greater quantities of provisions were thus found to satisfy religious and other demands.

The Greeks, before the Christian era, were so far advanced that the modern disputes about who was the first man to invent the movable-comb hive—von Berlepsch or Dzierzon, Langstroth or Debeauvoys, seem futile. Whether Wankler or Benton first spoke about queen-cells and grafting, or who was the first to think about the glossometer, may all be put in the discard. Long before Francois Huber and Wildman, frames were advocated, and at least 2700 years ago the ancient Greeks knew the A B C of frame hives, as we are told by Hesiod. Wickerwork baskets with movable-top covers were advocated for bees in old Hellas. Long before Maraldi and Reaumur, before Schirach or Swammerdam, Arabian philosophers, at their height about the tenth and eleventh centuries, wrote of these things.

All along the Mediterranean, North African hives are of the flat elongated kind, prepared by the natives from fennel stems or bark of cork (see Tellians*). That this kind of hives has had a great influence on the swarming propensities of the native bees can best be seen by comparing the same bees kept in modern movable-frame hives by the French and other European settlers in Morocco, Algiers, and Tunis. In fact, the Tellians kept in big hives swarm a great deal less, or cease to swarm altogether, when properly managed. This was seen in those kept by Baldensperger Brothers in Alma and Blidah, near Algiers, or those brought over from Algiers to the Alps in southern France in 1892. The propolizing propensity of those bees has simply been bred into them on account of the numerous enemies continually lurking around, and can be bred out only after generations of bees living in a country void of such enemies.

As the great glacial disturbance drove back mammoths and megalosaurians from northern Asia, Europe, and America, before the Tertiary period, so perhaps the Greek and Roman warriors, two thousand years ago, put a stop to advanced agriculture and apiculture. World wars between humans have always been a barrier to the advancement of rational beekeeping as well as other branches of agriculture, whether these wars were due to political, geographical, or religious influences.

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*Gleanings, July, 1925, page 441.

FROM THE FIELD OF EXPERIENCE

HONEY IN THE HOME

A Few of Its Many Uses Aside from That of an Excellent Spread

Many housewives know only one use for honey—as a spread for bread. While it is excellent thus, there are so many other ways of making use of its fragrant aromatic sweetness that one must guard against extravagance, after its advantages are discovered.

Any place that sugar is used you may substitute honey for part of it. For breakfast pancakes or waffles, honey is much nicer. It may be warmed by setting it over the tea kettle to steam and become liquid. But guard against too much heating, which prevents subsequent crystallization. Sugaring is a sign of pure unadulterated honey which has not been heated. It makes a good spread for fried mush or French toast.

In puddings the flavor is best appreciated if it is stirred in after removal from the fire. This is also true of cooked salad dressing or mayonnaise. An excellent pudding sauce is made by stirring together one tablespoonful of sugar with two of cornstarch, adding one cupful of water. Add one-fourth of it cold, making a smooth paste, and the remainder hot; cook two minutes, stirring; remove from fire and add one-fourth cupful honey and two tablespoonfuls butter.

The usual omelet is spread with honey before scoring across the center, folding over, and rolling out onto a hot platter, to serve immediately. This can be a flat omelet made by beating the eggs well, adding a tablespoonful milk and ⅛ teaspoon salt to each egg, and turning into a hot buttered aluminum omelet pan, or skillet, or the egg whites may be beaten stiff, and beaten yolks added gradually, to make a puffy omelet.

Substitute honey for sugar in bread, and it will have a tendency to stay moist, and be a bit heavy, unless you work plenty of flour into it and let it rise good and light, in which case it will be excellent. This is my recipe for sweet bread: ¼ cupful honey, 3 tablespoonfuls shortening, and teaspoon salt, added to one pint milk which has just come to a boil. Dissolve a cake of yeast in ½ cupful warm water, and add to the milk when it has cooled to lukewarm, also a beaten egg. Beat in flour until stiff enough to turn out on a well-floured board. Knead gently until it does not stick to the board, about five minutes. Put in greased bowl, with the top greased. I use a tasteless cooking oil for convenience. Let rise till double, work down in the bowl, and let out gas; let double, then knead well about four minutes, and shape into buns, twists, or cinnamon rolls, or spread flat in dripping pan and cover with a mixture of equal parts honey and peanut butter. This soft dough must be molded into thin, small loaves or buns, not too thick through. Let double, then bake at 425°, a hot oven, for twenty-five minutes. The buns spread with honey and sprinkled with nuts are baked at 375° so they will not burn.

Cedar Rapids, Ia. Doris W. McCray.

THE BEES' FUEL SUPPLY

How the Colony Keeps Itself Warm During the Rigors of Winter

Human beings are not the only ones concerned at this time about the condition of their fuel bunkers. The honeybees also have their worry about supplying the furnaces. Mining conditions in the bee collieries of Van Wert County, Ohio, have been unfavorable this fall, creating a condition that required forethought on the part of the beekeeper. The ones who used forethought by giving the bees ample fuel for the cold days are safe.

The bees' fuel is used for keeping their homes warm. No matter how cold the weather, they never allow the temperature of their apartments to become lower than 57° F. The bees' fuel is honey, burned in the furnaces of their digestive systems. The thousands of furnaces in a single hive form a heating plant. This heating plant is a spherical-shaped cluster of bees, which gradually moves back and to the top of the hive as the weather becomes colder. Thus the bees are constantly within reach of their fuel—honey.

All residents of the hive—all units of the heating plant—move their wings and legs and the muscular activity produces heat. This activity requires fuel; so, the colder the hive, the greater the activity of the bees, therefore the increased consumption of fuel. A temperature of 57° to 90° is maintained on the inside of the cluster at all times. The bees on the outside of the cluster form insulation, holding all but enough heat to keep the temperature of their home to the required 57°.

If bees are given adequate winter protection (both packing and wind-break)

and ample fuel of good quality, the beekeepers' worries are over for the next few months. Bees can be packed at zero temperature without much injury, but, of course it is better to pack around the first of October. Chas. N. Poling.

Van Wert, Ohio.

SNOWBERRY IN WESTERN CANADA

Probably not the "Buckbush" of Idaho. Important Honey Plant in British Columbia

In Gleanings for November last, page 736, J. N. Clark, of St. Maries, Idaho, gives his experience with regard to snowberry or "buckbush," as a honey plant. He says that only once in seven years his bees gathered a small surplus from this source. He also says, "Never have I heard a beekeeper in this region refer to buckbush as a source of surplus."

In British Columbia the shrub commonly called "buckbrush," which name would appear to be synonymous with "buckbush," is the *Ceanothus* of which there are two species that grow in the interior, one an evergreen (*Ceanothus velutinus*), and the other deciduous (*Ceanothus sanguineus*). The pretty white panicles of flowers of both species are very similar. The flowers have a rather strong and sickly aroma. After several years of observation I have never seen bees on the blossoms, although these plants have the reputation of yielding nectar occasionally. They belong to the buckthorn family (*Rhamnaceae*).

On the other hand, the snowberry, or waxberry, the species *Symphoricarpus racemosus* and *Symphoricarpus occidentalis*, the latter being also known as wolfberry, are two of our most important honey plants, and large quantities of nectar are gathered from this source by the bees every year. That the honey is first-class has been clearly proven by the fact that some of it obtained the gold medal, the highest award at the Vancouver Exhibition in 1924. The honey is water white and has a good body and nice flavor. In the western section of the interior of British Columbia, *Symphoricarpus racemosus*, commonly called snowberry or waxberry, is apparently the only species to be found, while in the eastern section *Symphoricarpus occidentalis*, or wolfberry, is common, in addition to the former. The wolfberry is a dwarfer growing shrub with much broader leaves, and on this account it is probably the more valuable honey plant of the two species. On Vancouver Island another kind grows which has a weeping or trailing habit, named *Symphoricarpus mollis*. This is most likely a variety only of *S. racemosus*. These plants all belong to the honeysuckle family (*Caprifoliaceae*). W. J. Sheppard.

Victoria, B. C.

BEEKEEPING IN PHILLIPINES

How Honey and Wax are Obtained by Natives of These Islands

While there is some native honey and beeswax coming into Manila from the provinces, the natives make no effort to keep bees in a commercial way. All the honey and beeswax that come in are from wild bees, and the honey is not considered to be of good quality, owing to the lack of knowledge as to how to extract it properly.

Modern hives in the Philippines. Apiary of J. D. Sullivan, Manila.

I brought with me here eleven colonies of Italian bees a year ago, and these had increased to twenty-five colonies. However, eight colonies were stolen by the wild mountain tribes, who carried the eight colonies about three miles away, and, owing to the number of stings received, set fire to them, the burned hives being found several days later. The remaining colonies are doing quite well in Benguet Province, increasing rapidly.

Successful beekeeping for the Islands in general will be difficult, owing to the number of pests, the lowlands being infested with ants, cockroaches, and, worst of all, bee-killing birds which usually get the queens on their wedding flights. Many of the trees do not blossom at all, but start in bearing fruit a good deal like the banana tree, the fruit appearing first like small nibs and increasing in size till maturity.

The native bees are much smaller than the Italians. They are good workers and very gentle. They accept modern hives with comb foundation, but, outside of one or two hives kept by the Department of Agriculture, no attempt has been made to do anything with them. Beekeeping has never been taken up in these islands, and it remains to be seen whether or not the natives will take to the idea, other lines of agriculture offering more money returns with less work, the less work part of it especially appealing to them.

Up in Benguet Province we have the gigantic bee, *Apis dorsata*, which is about as large as a bumblebee. These bees attach their comb to a fork in a tree, building it about six feet long, three feet wide, and about three inches thick. They are very fierce and six or seven stings are enough to cause death. A friend of mine made an attempt to capture a colony some time ago, taking with him six soldiers, all of whom were heavily protected. They all had to beat a hasty retreat, one soldier receiving one sting in his arm which swelled to an enormous size. The Igarettes drive the colony out by starting smoke fires under the tree, returning after a few days when the bees are all gone.

Rice, corn, hemp, and tobacco are the principal crops raised here, and, of course, bees can not get much from these plants. Bananas are raised all over the islands, from which a bee has no chance. Cocoanut trees are good, but owing to the number of lizards on these trees the bees are afraid to work much. Also the groves have the ever-present bee-catching birds. These conditions, of course, apply to the lowlands, but up in the mountain province where I now have my bees conditions are different and the bees have a good chance of success there.

One of my experimental apiaries is located under a house which affords good protection from storms, and at the same time acts as a shade from the terrific heat of midday. There is also plenty of ventilation. J. D. Sullivan.

Manila, P. I.

MORE ABOUT IMMUNITY

Disease Develops More Rapidly in Some Colonies Than in Others

The note by Dr. Lineburg in October Gleanings, inferring that he might have a strain of bees which are immune to American foul brood, interested me greatly, not only because of the need of such bees, but because several cases have come to my notice in inspection work which seemed to point in the same direction. The more detailed account by Dr.

One of Mr. Sullivan's out-apiaries located under a house, thus being protected from heat and storms.

Lineburg in November Gleanings served to increase my interest.

No doubt many persons will be skeptical because we have been taught that bees can not remove from the combs scales of larvae dead of American foul brood. Some will probably believe Dr. Lineburg is not dealing with that disease.

In my inspection work in New Jersey, I have found a number of cases where colonies had died of American foul brood and been robbed out. There seemed to be no reason why any colony in the apiary should escape disease. Nevertheless, a goodly number would be found showing no symptoms of disease.

A more specific case came to my notice the past season. About June 10 one colony in an apiary in which some American foul brood had been found showed two dead larvae. I hesitate about pronouncing a case American foul brood when no scales are to be seen in the combs and when but one or two dead larvae are to be seen in the hive. However, examination by the microscope clearly showed the presence of spores of American foul brood. For some reason this colony was not shaken. On September 5 no disease could be found in this colony except two dead larvae. In this interim there was not such a honey flow as would tend to bury a small amount of infection. In most cases such a colony under the circumstances would have gone down rather rapidly. It seems rather striking, then, that in nearly three months there was no increase in the number of dead larvae visible in the hive and that no scales should appear. E. G. Carr.

Pennington, N. J.

IMMUNITY IN INDIVIDUAL LARVAE

Experiments in Feeding Spores of American Foul Brood to Queen Larvae

Dynamite is not a suitable plaything for children, but in experienced hands is a mighty force for either construction or destruction. It is with considerable hesitancy that the following formula for a high explosive that may eventually blow the heads off of American foul brood germs is given. If you are a beginner in beekeeping, you will do well not to read this article as it would in all probability be your own head that would be blown off.

Every living animal or insect has to contend with diseases to which they possess a certain amount of natural immunity, varying with the individual. In the history of the human family there has never been a disease epidemic virulent enough to kill every individual in the infected area. In the history of the lower animals, there seems to be no record of any species having been exterminated by the ravages of any one disease. In other words, it seems to be one of nature's laws that, no matter what the disease, there will always be some individuals that will resist its attacks. If this is true, and I believe it is, it is only reasonable that in some colonies of bees there will be a certain per cent of the individual larvae that are able to resist American foul brood. If these individual larvae could be sorted out and were made to develop into queens, instead of workers, they might become the basis from which a strain of bees with immunity to American foul brood as a fixed quality could be developed.

In the year 1912 I conceived the following plan for such a sorting of larvae: To graft in royal jelly that was thoroughly infected with American foul brood, this infection to be secured by mixing the jelly with enough of the dead ropy body of a larva dead of American foul brood to slightly discolor the jelly. In such a bed of infected food, only larvae that, as individuals, were able to resist American foul brood could ever develop into adult bees, and by this process these adults would be queens.

In the year of 1913 I established an experimental yard and during the season made nearly 150 grafts, using the larvae from more than 25 different queens. The bees accepted the infected jelly and worked as if it were clean. In a few days the larvae would begin to die. Out of a whole line of grafts there would generally be one or two sealed cells. In all cases these contained dead larvae except two. These two cells, out of the whole 150 grafts, were the only ones from which queens emerged. They developed into good laying queens. The experiments indicate that while the per cent of larvae that, as individuals, are able to resist American foul brood is small, it actually exists.

When a strain of bees is developed that will resist American foul brood (and it is only a question of time until it will be—possibly a decade, possibly a few hundred years) it will be developed by an immense amount of good hard work and will cost a great deal of money. I am offering this for publication in the hope that the giving at this time of a method of queen-cell production that automatically eliminates the unfit may hasten the development of such a strain.

Augusta, Kans. A. V. Small.

SIFTINGS

by J. E. Crane

Shall we say prop-o-lis or pro-po-lis? I believe those favoring pro-polis have most decidedly the best of the argument. See pages 787 and 789.

* * *

On page 789 E. A. Kirkpatrick gives an excellent way to overcome a serious difficulty in grading honey. Selfishness is without doubt the most serious difficulty in grading honey correctly with many persons. It dims the eyes and warps the judgment of quite too many of us who think we can see straight.

* * *

On pages 766 and 767 of Gleanings for December the Editor discusses five-pound pails and five-ounce jars for honey. I believe he is quite right in thinking we need both sizes. We used to put up most of our extracted honey in glass, in sizes from five to fifteen ounces, but now the bulk goes into three and five pound tin containers. It is easier to supply people with what they want than to try to get them to buy what is most convenient for us to put up.

* * *

We still put up extracted honey in glass packages of 2½ to 15 ounces, and in 3, 5, and 60 pound tins, and all are wanted. Of course, honey is more expensive in a five-ounce jar; but those who buy doubtless get good wages and can afford it. Only a few days ago a carpenter at work on a near-by job inquired, "Have you any honey?" "Yes," I replied, "we can sell you any amount you like up to a ton or more." He said he wanted only 25 cents' worth to eat with the lunch he had brought with him. Another carpenter, hearing of honey, wanted a dollar's worth to take home to his family. So I sold him a tin and suited both parties.

* * *

That is a right good article on wintering bees by Francis Jager, commencing on page 768. Among the many good things he says is the statement that the best temperature for good wintering is "between 40° F. for strong colonies, and 46° for weaker colonies. Above 46° the bees break the cluster; below 40° they eat too much. The weighing of every colony as it goes into and out of its winter quarters, while some bother, will give a beekeeper some facts he is not otherwise likely to learn. He says, "The man with a large apiary will find cellar wintering the most economical in equipment, time, and labor." I believe he is right, and yet I believe there are many such cellars that have not proved altogether satisfactory.

* * *

It is certinly stimulating to read about "Large-Scale Honey Production," beginning on page 775, by E. R. Root. Among other things he says Mr. Hodgins "so manages his operations that he has eliminated feeding, eliminated going through the brood-nest, and eliminated a lot of unnecessary operations that many beekeepers think important." Yes, that is just the reason he has been able to produce honey on so large a scale. He has been doing his own thinking and planning, and is now getting his reward. Mr. Hodgins thinks bees may be packed too heavily, and so winter poorly. I have many times thought bees would winter better if they had been kept cooler. Prof. Jager says if the temperature in his cellar goes above 46° the bees will break their cluster. The temperature that will keep bees just nicely clustered seems to be the best for bees in winter.

* * *

I have often thought how delightful it would be if I had the time and means to travel over all the world and see all the sights we read about, and visit all the beekeepers we would like to. Would it not be just grand! But it takes lots of money to travel, and often becomes wearisome and monotonous. I think often it is quite as enjoyable to sit in an easy chair and read Gleanings. F. Tonzalin, on page 786, takes us to Jamaica and tells us of the honey resources of that island, the trials and successes of its beekeepers. The Rev. William Murdock takes us to Scotland without even the trouble of boarding a steamer, and tells us of conditions there. Almost before we are through with him W. J. Nolan takes us all over Europe, showing us the large amount of honey different countries import and the increasing demand for it. Queer, isnt' it, that New Zealand honey should sell for twice that from California? Mr. Nolan gives as a reason for this that it is better advertised. Quite likely, as sales nowadays seem to depend more on advertising than anything else.

Again I turn a page and sit down with beekeepers from "North, East, West, and South." What a treat! But I haven't space to tell of all I can learn from all parts of our broad land—you must read for yourself.

FROM FOREIGN LANDS By W. J. NOLAN

About 4000 samples of brood and adult bees were forwarded for diagnosis to Doctor Morgenthaler in Switzerland during the past year. A movement is on foot, according to the Schweizerische Bienen-Zeitung for November, to have this work accomplished through other agencies, thus permitting Doctor Morgenthaler to devote his entire time to bee-disease research.

At the present time there is much talk in this country about establishing beekeeping libraries. In other countries many beekeeping associations have long maintained such libraries. In the Province of Quebec, Monsieur Vaillancourt, in charge of beekeeping for the Province, and editor of L'Abeille, has been instrumental in the establishment of a traveling library for beekeepers. One of the best beekeeping libraries in the British Isles is stated in the Scottish Beekeeper for November to be that of the Scottish Beekeepers' Association, some of its supporters calling it the best in Great Britain, not even excepting that of the British Museum. It contains some 409 books and 161 volumes of magazines.

The need for a skilled "apicultural botanist," as set forth in the Australasian Beekeeper for October, applies to beekeepers in other countries as well as to those in Victoria, before whom the article was originally presented. Its author conceives the work of such an expert as falling under three heads: (1) an exploration and mapping out of all honey resources of any particular region; (2) research into the building and flowering habits of honey plants; and (3) investigation of the factors which govern nectar secretion, pollen formation, and kindred subjects. As stated in the November number of Gleanings, the Bee Culture Laboratory, in so far as its present limited resources permit and with the co-operation of various beekeepers throughout the country, is now engaged in work along lines included under the first two of these heads.

Contrary to expectations, the bumper honey crop in Scotland this year has not depressed Scottish honey prices, for these have actually become higher since August. Mr. Anderson, of the North of Scotland Agricultural College, writing in the Scottish Beekeeper for November, ascribes this to the fact that the Scottish public is apparently becoming educated to the use of honey and thus the demand is increasing at a greater rate than the supply. To quote, "In 1925 people have actually started to eat honey, to regard it as a food, not as a luxury and remedy for colds." The annual importation of some 8,000,000 pounds of honey into Great Britain and northern Ireland does not dim his vision of the enormous potential demand which exists for honey, since he argues neither for a prohibition on the importation of honey as in New Zealand nor for a tariff as in this country, but affirms, "We rejoice indeed that there should be available a cheaper imported honey for those who can not afford the more expensive Scottish product." How little used our own public is to honey is shown by the fact that, although we lead the world in the production of honey, our annual consumption of honey is probably between 1½ and 2 pounds per capita, while that of sugar is over 100 pounds.

The profitable marketing of domestic honey in Germany is apparently not being so readily accomplished as in Scotland, and many German writers are attributing a large share of their trouble in this respect to the lack of sufficient legal restrictions to check the flood of foreign honey now entering Germany. Some are bitterly attacking foreign honey on the ground that it often contains various kinds of filth and dirt, while others attack its unrestricted importation on the ground that it may be the means of bringing in certain bee diseases.

A three months' test of queens to be held by the Ruakura State Farm in New Zealand is announced by the New Zealand Fruitgrower and Apiarist for October. Pure Italian queens of any age were to be delivered at the farm between October 25 and 28, accompanied by five pounds of bees not on frames. Candy while traveling was permissible. On arrival all were to be placed on foundation and treated alike at Government expense. Judging is to be done on a basis of 100 points, 50 of which are to be for production of honey, 20 for non-swarming, 10 for laying qualities, 10 for color, 5 for general appearance of inside of hive, and 5 for quietness of manner. It is recognized that such a test is not to be regarded as final, but some interesting results are anticipated, nevertheless.

A division of labor in the honeybee according to age has long been accepted as true. Under normal conditions, roughly the first half of the worker's life, or about three weeks, is given over to hive duties and the last half to field duties. The exact sequence, if any, for all of the duties within the hive has yet to be set forth. Thus, although it is commonly ac-

cepted that younger bees function as nurses, the relative ages at which such duties as guarding, carrying out debris, taking incoming nectar from field bees, and stowing away pollen are performed, have remained unknown. To G. A. Rosch, who has been working with Prof. Dr. von Frisch, of Germany, goes credit for throwing more light on these four duties as well as furnishing interesting details on the nursing period. One difficulty in this field has been that of so marking a sufficient quantity of bees in any particular colony that each bee could be recognized individually throughout its life. This difficulty was overcome by using the method mentioned by von Frisch in his paper of 1920 when he first made public his work on the "dances" of the workers. The hive used by Rosch consisted of several frames so arranged that each side of each frame was exposed to view through glass. The work published covers results obtained in three successive years beginning in 1922.

In general Rosch confirms earlier conceptions that, under normal conditions, about the first three weeks is given over to hive duties, and the remainder of life to field duties. He found the average duration of the worker's life in the busiest period of the year to be about five weeks. The period of hive duties is divided into two parts, the first of which begins with three days devoted to cleaning out cells for the queen to lay in and is followed by about ten days given over to nursing larvae. The second part of the period of hive duties, about a week, if nursing continues until the thirteenth day, is a period of varying hive duties, such as guarding, stowing away pollen, carrying out debris, and the like.

No hard and fast time limits are given for any duties, since, with the exception of the first three days, an excess of bees for any one activity may lead to this excess performing other duties, and vice versa. For the first three days, however, the only work performed by the worker after cleaning its body on emergence and getting food from other bees, is to clean out brood-cells. In the course of the process the cell is "licked" with the tongue, and this apparently leaves an odor since the queen was observed to pass over all cells not so treated. Several different bees or even the same bee may visit a cell in succession; but no worker was seen to be the first to clean out the cell from which she had emerged, others usually entering while she was cleaning herself up. These young bees were never seen to gnaw down any capping left on brood cells. This duty remains for older bees. During the first two or three days young workers were never seen helping themselves to any food stored in the hive. After cleaning cells for a time, they would often remain apparently idling on sealed or unsealed brood. This, together with the fact that bees of such an age appear unable to do anything but clean cells, is of prime importance, according to Rosch, because it serves to keep the brood warm. No other bees could do it so well because their duties take them away from the brood in the busy season.

One of the most important findings by Rosch, if confirmed, tends to further clear up the presence of honey and pollen in the food of worker larvae after the third day. He presents data from histological studies showing that the pharyngeal glands, which secrete larval food, are not completely developed until three to six days after emergence of the worker, and that by the fifteenth day their degeneration is under way. In line with this, he found bees during their first two or three days as nurses, immediately after serving as brood-cell cleaners, taking both stored honey and pollen and then feeding larvae which in no case were more than two days from being sealed in. According to his histological studies, the glands of such bees would not be developed sufficiently to secrete larval food. As a matter of fact, he states that the younger larvae were never fed by workers younger than five days. These older nurses, in addition, gave some food to the older larvae.

Orientation flights may begin in the latter part of the nursing period. This period itself, says Rosch, may extend slightly beyond the thirteenth day in case of lack of nurse bees. On the other hand, it may be cut short by a heavy honey flow, since the last period of hive duties begins by relieving incoming nectar-gatherers of their load and storing it away. Stowing away pollen, which the gatherers merely kick off in the cells, is performed at this age also. Once these duties were begun, the brood was left to others. Longer orientation flights were observed at this time. Since bees so commonly fly a little distance from the hive with debris, Rosch holds that they do not become debris removers until they have made enough orientation flights to find their way back to the hive. Thus he explains why older bees dispose of cappings from brood-cells. Guarding was found to be one of the last duties before taking to the field. Rosch observed an individual bee on guard for three successive days. He did not find any definite sequence in field duties, nor did he find the first field trip caused by any "dance." It is his idea that each bee learns the significance of the dances only by repeated experience later.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California—The honey market seems slow and the demand not at all active. Of course, there is little of the southern California crop in the hands of the producer, but it makes him feel better to know that the price is good and the demand strong.

Prices on beeswax are firm and the demand stronger than for some time. Thirty-six cents has been offered. A year ago wax was selling around twenty-five and buyers scarce. With honey crop prospects good, the demand for foundation should help to boost the price of wax.

Grass is growing green over our hills and valleys as the result of our early rains. Beekeepers generally are optimistic as to the prospects for 1926. If we get a good crop next year it will make two crops in six years and we feel that we are entitled to that many any way. Of course the other four were not total failures, but lacked a whole lot of being crops.

When we think of the awful drouth that Mr. Wilder tells of as having extended over six or seven southern states, we can still feel that ours might have been much worse. But most of us feel that there are better prospects ahead. The season's rainfall to date is encouraging, being considerably ahead of this date last year. Of course a crop is not assured by any means, as it will take a lot more moisture to make a crop.

We have on our desk a copy of Circular No. 297 from the University of California, College of Agriculture, Berkeley, California, entitled "A Survey of Beekeeping in California," by G. H. Vansell, and "The Honeybee as a Pollinizer," by E. R. DeOng. This is a circular well worthy of careful reading. The writers show a knowledge of their subjects only to be gained by earnest thought and careful observation. They credit California with 180,791 colonies of bees in 1920, according to the U. S. census, with a probability that this is not over 50 per cent of the actual, and a production that varies from one million to sixteen million pounds. Bees are to be found in all of the fifty-eight counties of the state. Attention is called to the fact that much loss is sustained each year by the ravages of the wax moth. Many combs are destroyed after they are put in storage. This comes through not caring for them systematically. Sulphur or some other moth-killer should be used regularly.

On the needs of the beekeeping industry in California, Mr. Vansell recommends the study of literature, better organization for co-ordination of interests, co-operative selling, and a better general spirit of co-operation in the beekeeping industry in the state. Get-together-and-stick is conceded to be the best method of improvement. The marketing of a product after production is apparently coming to be the largest problem in agriculture. Mr. Vansell says in his summary: "The actual returns received by the average beekeeper are not in keeping with the optimistic reports that one so often hears." To which we can only say "Amen."

Mr. DeOng handles the subject, "The Honeybee as a Pollinizer," in a most excellent manner. Of especial interest is his table showing comparison of the flight activity of the honeybee and the blooming period of fruit, with meteorological data. L. L. Andrews.

Corona, Calif.

* * *

In Utah—Weather conditions in Utah have been a little unusual during this autumn. There has been but little weather that bees could fly for the past six weeks, and more moisture than usual, which has been favorable to plant growth. One unfavorable condition I notice is that when the bees are confined for a short period they show signs of dysentery. Whether this comes from something that was gathered late and will disappear when they commence to consume their winter stores, time only will tell; but I fear that, unless there are frequent flights during the winter (which is unusual here) this may cause quite a loss before spring. The early demand and prices were best for both comb and extracted honey, but good crops of all kinds and good prices have stimulated local consumption.

We enjoyed a visit from Mr. Sechrist, the Government man who is trying to simplify comb-honey grading rules and make them universal. To my mind there is nothing more important. There are too many grades, and some of them just a distinction without much difference. If all the grades were placed on a counter a customer would naturally take choice, thinking, of course, that if he had his choice he had the best. As it is there are several grades better than choice. It is hard to fix grades so the average dealer and consumer pay much attention to them. I have seen No. 2 with a big pla-

card stuck up on the case, marked "pure choice" comb honey, and selling for two cents per section more than fancy in a store across the street. When Mr. Sechrist was here he had an instrument for grading extracted honey, and he took some that looked to me like light amber and actually made it look like white honey, and graded it that way. I felt as cheap as Old Drone did when his wife had sold the surplus that he didn't have, for I had just sold a carload for two hundred dollars less than I ought to have had, thinking it was light amber. I had a notion to buy one of the fixin's, but I happened to think I would have to buy one for each of my customers so it would look white to him, so I am awaiting further development. M. A. Gill.

Hyrum, Utah.

* * *

In Manitoba—At this date, December 1, the subject of marketing seems to occupy the minds of our beekeepers. The bees went into winter quarters rather light in stores. We had two or three good flight days in the first week of November, when they had good cleansing flights; but the nights were too cool for them to work on syrup, and a number report that they were forced to house them and take a chance.

Marketing seems to have taken some peculiar turns this year. The early selling season found our market bare of good-quality honey. Small stocks of amber were noticed in a great many stores, but it was not selling, and the dealers were disgusted with the quality, as many tins had been returned by customers who did not like amber honey. These goods had been able to find a place on the store shelves because there was no good honey available, and were mostly imported from outside the province.

We sent out a letter early in the season to all the members of our association, urging them to sell early while the prices were high, as they were probably higher than they would be for years. The result was that they rushed their early honey to market and secured a place with the dealers that they have been able to hold ever since. A recent survey of the stores in Winnipeg revealed the fact that nearly every department, grocery, and provision store was well stocked with the local product, and a remarkable and desirable point is that they have all been advertising it both in the papers and in the dodgers that are distributed in the doorway of every house in the city.

Reports would indicate that our crop is now about two-thirds sold—or, rather, is out of the hands of the beekeepers, as an article is not really sold until it reaches the consumer. A few with large stocks are not trying to sell as they think the price will be higher after the holiday season, but there are only a few who take this attitude.

In the past, honey has been mostly sold in tins, but this season our tin men fell down on their deliveries of cans, and many producers were forced to buy quart jars. In these packages the honey is very attractive, and in advertising it the customer is reminded that a quart jar is worth 12 cents after the honey is eaten, while a can is worth nothing. The chain stores, of which we have a number, seem to have featured this point, and are doing a big business in quart sealers.

I think that this season has perhaps been the most satisfactory and profitable of any in the history of beekeeping in this province. The crop has been good, the quality first-class, the price high, and the demand good. In other words, we have the people eating honey as never bfore; but while this is all true, we also have the information that for every jar or can of honey sold the grocers sell ten jars or cans of jam, all of which comes from outside the province. Honey is about the only substitute for jam and preserved fruit that we can produce in this north country, and we have a long way to go before all this need is supplied.

Our convention dates are set for January 26 and 27. Convention will be held in Royal Alexandra Hotel, Winnipeg.

Winnipeg, Can. L. T. Floyd.

* * *

In Texas—The weather conditions for the month of November were adverse to the bees. This month generally is one free from cloudy days and with just enough cold nights to produce light flows from the "top crop" of cotton and fall perennials. As a rule, many spring annuals also bloom in this "second spring," as it is often called. This year the flowers appeared on schedule time, but cold misty days kept the bees at home. The result is that brood rearing has been prolonged and the winter stores much decreased. Beekeepers all over Texas must watch their colonies closely and feed as soon as possible or the winter loss will be great. Contrary to the general procedure, the bees have built beautifully regular winter brood-nests this fall. Should an even temperature prevail the next two months and feed be given now all colonies should be in fine condition for the first flow of 1926.

The cool wet weather that has been so much against the bees has been very advantageous to the honey plants, especially the horsemints. With a normal rainfall, next year will be a horsemint year.

The chaparral honey plants, especially huajilla, have made a wonderful growth in the past two months and promise a good bloom next spring. Mesquite can hardly be expected to give a general flow again next year, but local flows can be looked for in sections where the rainfall is still below normal.

The more the beekeepers watch the mistletoe the more they are convinced of its value to the bees. This plant, which is a true parasite, grows on almost every tree and shrub in the South. During the summer it has its resting time. As the leaves fall from its host tree the mistletoe puts out its new leaves and blooms in December and January. The fruits resulting from these flowers do not ripen until the next December. The nectar brought in from this plant is water-white to brown, and is very sweet. Records from scale colonies shown an increase of weight up to 17 pounds during the blooming of mistletoe in the past five years. While this plant is a life-saver for many a colony of bees, beekeepers can not depend on a flow from it for winter stores, as many times the low temperature during these months keeps the bees from working.

One beekeeper on the Gulf Coast reports 40 days of continuous fog and rain, and yet says his bees have made winter stores from the late-blooming "weeds."

A valley beekeeper writes that he has prospects for a bumper crop next spring, and one from the central part of the state says his bees are on starvation rations, with no prospect of a crop in 1926. Taking reports as a whole one must say that beekeeping conditions of the state are normal. H. B. Parks.

San Antonio, Texas.

* * *

In Minnesota—The matter of greatest interest to the beekeepers of Minnesota since my last writing has been a development of the honey market. The actual crop of honey probably exceeds my former estimate of 150 per cent of the normal. There is honey, honey, and honey everywhere. The result is a steady decline in price in spite of the fact that more honey is being sold in both St. Paul and Minneapolis this fall than ever before. Never has the need of intelligent marketing been more apparent. There are sections in the United States where more honey is needed, while we have probably a hundred carloads of honey and do not know what to do with it. An effort was made last year by a committee of seven to organize a marketing association, but their efforts failed through the apethic attitude of the beekeepers. We are beginning to believe that, unless some large financial concern or nationally known brokers' concern takes over the handling of United States honey, the price will keep going down until the big beekeepers will be conducting their business at a loss. Countless beekeepers are peddling their honey today from house to house at 10 cents a pound in 5 and 10 pound pails, while the last government report quotes the wholesale price at 11 cents a pound.

The Minnesota Beekeepers' Association organization had a well attended annual meeting at the West Hotel, Minneapolis, December 1 and 2, Dr. L. D. Leonard presiding. The guest of honor and speaker of the occasion was Jay Smith, of Vincennes, Indiana. The officers for the coming year are Rev. P. J. O'Connor, Renville, Minn., president; J. C. Hagan, Northfield, Minn., vice-president (elected by acclamation); G. C. Matthews, Minneapolis, secretary-treasurer, and Jos. Finstad, St. Paul, on the executive committee for three years with F. W. Ray and A. W. Rankin, Minneapolis.

The university authorities are at present remodeling the headquarters of the Division of Bee Culture at University Farm, St. Paul. New class and laboratory rooms are being built to give more room to the increasing number of students, and what is probably the most perfect bee cellar in existence has been built. The cellar is 40 feet long, about 14 feet wide and about 10 feet high, with a brick arch ceiling inside of a gravel hill, two fathoms under the ground, with a perfect ventilating system and constant temperature.

It appears that the beekeepers have neglected to feed their colonies with sugar syrup this fall, and a great deal of honeydew is present in the hives. Even at this time of the year many bees are noisy and fly out of the hive in great numbers.

Six short-course lectures over the radio, WCCO, are being given at present, treating on the following topics: (1) Minnesota Bee Industry, (2) Minnesota Beekeepers, (3) Pleasures and Profits of Beekeeping, (4) Honey as Food, (5) Marketing of Honey, (6) State and Government Aids to Beekeepers. Many hundreds have enrolled in this course.

Another short course will be given at University Farm in January, 1926, which we will report in our next paper.

Miss Florence Dell, who for many years has been head clerk in the Division of Bee Culture, resigned in October to devote her whole time to beecraft, and Miss Yvonne Seneschal has been appointher successor.

St. Paul, Minn. Francis Jager.

In Oregon—The writer has been giving a series of lectures on beekeeping over the Oregon Agricultural College Radio Broadcasting Station KFDJ. Two lectures have already been given and two more will follow next spring, one on the evening of March 22 and one on the evening of April 26. Further details relative to these lectures will be given later.

Why not a special section in our bee journals, giving the dates of all radio lectures and wave length? I believe that this must come eventually—why not now?

Although the writer was unable to attend the Pacific International Livestock Show this fall, all reports coming to him from various sources indicate the honey show was exceptionally good, which we might expect under the able leadership of Mr. J. Skovbo, assisted by Mrs. C. Edith Perry as demonstrator. Mrs. Perry has not only demonstrated honey for some time, but has demonstrated to the beekeepers of the Northwest that she is proficient at the job. Although the honey show was supervised by the Oregon State Beekeepers' Association and the premiums were guaranteed by the Association, the show was open to all beekeepers in the Northwest. It is hoped that in the future more districts outside of the state of Oregon will take an interest in this honey show and make it as famous as the mid-west show at Omaha.

The state beekeepers' meeting and conference will be held at The Dalles, Oregon, on January the 18th and 18th. This meeting is being held at The Dalles for two reasons: first, in order that we may bring more forcibly to the attention of the fruit-growers of this district the importance of beekeeping as an industry; and second, that it may be more convenient to the beekeepers of central Oregon, as well as to both eastern and western Oregon, who may come in by automobile over the Columbia River highway.

The program promises to be exceptionally good this year, as we have already secured the promise of Mr. J. I. Hambleton, Federal Apiculturist, Bureau of Entomology, Department of Agriculture, Washington, D. C., who holds the position formerly occupied by Dr. Phillips. Mr. Kenneth Hawkins, of the G. B. Lewis Company, will be with us.

Honey seems to be moving well in most sections. Retail prices remain about the same.

With the exceptionally fine fall, bees seem to have gone into winter in good condition. H. A. Scullen.

Corvallis, Oregon.

In North Carolina—Following about the best honey season this state has had in a number of years, an early fall and an unusually cold November has settled the bees into an unusually early "winter cluster"; and those who put off "from post to piller" the work of adjusting hives to settled winter conditions are paying for their negligence by facing an almost impossible condition, so far as any chance to adjust hives at this late day is concerned. Usually there is plenty of weather right up to Christmas when the bees can fly freely and gather some nectar.

Except in cases where beekeepers have been too greedy in taking honey, the hives are well stocked for the winter. However, there are sections of Piedmont and western Carolina where the summer and fall drought cut off the fall honey flow. In these cases—and they are numerous in the middle and western sections of the state—feeding is being found necessary to an unusual extent. Altogether, however, the condition of the bees in this state is well above the average for this season of the year. Furthermore, North Carolina's honey sources being chiefly the wild flora, the general condition of honey plants may be said to be well up to the average and an early and favorable spring would assure another bumper crop. But the outlook now is for an unusually severe winter.

The honey market in this state all through the fall months has been very satisfactory. The smaller beekeepers have had little trouble in disposing of their product, and the larger commercial producers are finding a ready and appreciative market, especially where the honey has been handled properly. However, there is still a large quantity of honey in the hands of the producers, and if this state is to absorb it there will have to be a lively movement both in selling and in consumption during the remaining four months before the production of the next crop should begin.

Wilmington, N. C. W. J. Martin.

* * *

In Louisiana—The honey crop of 1925 is a thing of the past. Some of our beekeepers made money, while others came out merely holding their own. The past season has been the poorest in honey production of any for the past eight years, quite in contrast to that of 1924, when the crop reached the peak of production and made many beekeepers' bank accounts larger than they had ever been before. History does not repeat itself very often in Louisiana in bee culture when it comes to making failures in honey crops, for there

is a reason. Our main honey crops come from the lowlands along the bayous and lakes; and as these districts are usually damp the undergrowth bordering these streams for miles around in every direction is a mass of honey-producing blossoms. Last season for months we had but little rain, and as the water in the streams was very low the moisture in the earth was not sufficient to produce a large crop of honey. However, since the early part of September it has rained continuously, and the rivers are swollen and this lowland is in an admirable state to produce an abundance of honey plants for the 1926 season, so we predict a bumper crop at that time.

Bees are going into winter quarters in perfect condition and with all the food needed to carry them through until another crop comes. This possibly may not be correct in every case in the northwestern part of the state, as the drouth there held on longer than elsewhere. However, in the central and southern parts of the state the fall honey flow was as great as in former years, and the flowers produced a delicious light-colored honey with fine flavor. This flow not only filled the food-chambers, but in many instances produced a large surplus.

When this article appears in the January number, the bees will be busy in Louisiana on their first lap of honey-gathering for 1926. About January 5 the soft or water maple begins to bloom, and this plant gives quite an abundance of nectar. In some parts of southern Louisiana these trees grow so numerous that a surplus of honey is sometimes secured. After the soft maples other plants follow, and close behind comes the dewberry (blackberry) with another good honey flow. By the middle of February the bees are ready to swarm. E. C. Davis.

Baton Rouge, La.

* * *

In New York—This report is being written en route to New York City, where a meeting is being held tonight (December 11) in the office of the Herschel Jones Marketing Service in the interest of federal comb honey grades. Mr. E. L. Sechrist, of the Bee Culture Laboratory, Bureau of Entomology, Washington, D. C., will be present with a set of tentative grades he has drawn up after making a systematic and scientific study of the comb honey grading rules used in the various important comb honey producing areas of the United States. He will grade all kinds of New York comb honey with these rules and will then submit these rules to those present for criticism as to their practicabiltiy, comprehensiveness, and suitability to New York conditions.

The comb honey producers themselves have not asked for these grades, but those other than the producers interested in the marketing of comb honey in large quantities recognize an absolute need for comb honey grades standardized for the whole country. When the federal grades have been accepted, they will be promulgated at once through the State Department of Farms and Markets, which means that they will be used at the option of our beekeepers, but, where used, must be used accurately, for otherwise one would lay himself liable to the law. Our Co-operative Honey Marketing Association will also adopt them at once, for it has had dire need of them.

The Western New York Honey Producers' Association met on December 1 and 2. A plan was proposed and adopted whereby this association will endeavor to become financially stronger. Life memberships in this organization may be had by giving to it a colony of bees in a standard ten-frame hive with a standard full depth super. An association apiary will be established and operated according to the instruction of the board of directors by some one who will care for the bees on shares. The scheme of management of the yard will be worked out in conjunction with the State College of Agriculture so as to make it a demonstration apiary. New membership took to the plan with great enthusiasm. More than thirty colonies have already been donated.

Tunnels made by *Braula coeca*, the bee louse, were found by Mr. Virgil Argo, a graduate student at Cornell, on comb honey reported to have been produced in Livingston County, N. Y. *B. coeca* was also reported seen on a queen bee in an apiary in the city of Syracuse this fall. Mr. Argo is working on *B. coeca* as a research problem under Dr. Phillips and will investigate both these cases in early spring. *B. coeca* is known to be present now only in Maryland and southern Pennsylvania, where it is found in alarming abundance in some colonies.

Ithaca, N. Y. R. B. Willson.

* * *

In Ontario—The annual convention of the Ontario Beekeepers' Association was held in Toronto on December 1, 2, and 3. The attendance was good, possibly well on to 400 being there at one session. The program was along the usual order, stressing all phases of commercial beekeeping. While marketing was not on the list of subjects for discussion, it was noticeable that about all the commercial beekeepers took occasion to lay emphasis on the tre-

mendous over-production of honey in Ontario at the present time. The most of us feel that, unless something out of the ordinary takes place in the near future, beekeeping will soon be a very precarious business, as consumption both at home and abroad is not keeping pace with the heavy increase in production.

However, the situation will no doubt correct itself in due time, but in the adjustment to more favorable and normal conditions some are sure to suffer a lot financially, and all in the business can not help but be affected more or less. A peculiar situation emphasized by some at the convention was the fact that, notwithstanding the present over-production, some of the provinces are at present booming the industry more than ever.

Prof. Jager makes some positive statements in his article on wintering, on page 768 in Gleanings for December. Personally I like positive statements when the evidence supports one's contentions, and I prefer them to uncertain opinions even if the author of the positive statements may be wrong in my opinion. He states on page 770 that he wants either a rim below the brood-nest for bees to cluster in, or a shallow super filled with honey above the brood-nest, with "a little honey in the frames" to quote his exact words. With a well-filled brood-nest, a small clustering space below the frames would be fine, I should judge by theory, but not at all necessary as proved by actual trial in thousands of cases. A practically empty brood-nest with a shallow super of honey on top would in a great many cases prove disastrous here in Ontario for outdoor wintering in particular. The "necessary dry clustering space on vacant comb" is a delusion, as dozens of our most progressive and extensive beekeepers here in Ontario will testify.

Possibly I am more to blame than anyone else for over-production here in Ontario, not because of the fact that we have produced so very much honey, but because I persistently preached practically solid brood-nests on November 1 for bees to be wintered outside here in Ontario, at a time when such a doctrine was counted as heresy by the leaders of apiculture. But times have changed here in Ontario, and I think Mr. E. R. Root, who was present at one of the sessions when wintering was under consideration, will bear me out in the statement that the great bulk of the commercial beekeepers of Ontario put their bees into winter with practically every comb solid with honey by November 1.

Of our 1100 colonies, at least 800 were on such combs this fall; and as to losses, if losses we have, judging from past experiences that cover many years they surely will be among the colonies that have empty combs for bees to cluster on. Prof. Jager states that you "can not keep a strong colony contented in a brood-chamber filled with honey." Granted, so far as summer conditions are concerned, but questioned when the quiescent period of winter is under consideration. Of course, we have no way of consulting the bees on this question of contentment, aside from observing how they act under certain conditions. With us, provided they have a brood-chamber practically filled with good stores on Nov. 1, they always remain quiet all winter, no matter how cold the weather is; and, granted that they have a normal queen, they always winter 100 per cent. They certainly do not give us that record when they have poor stores in the hive, especially if they have a large area of empty comb in the brood-chamber when they go into winter quarters. Years ago we treated foul brood colonies in the fall by the McEvoy method, that is, by shaking the bees late in October on five or six combs sealed as perfectly solid as we could find. We do not practice this any more as we do not think it pays, yet in every case colonies so treated would winter perfectly.

What I have written has been in regard to outside wintering. I do not profess to know very much about cellar methods, as we practice indoor wintering very little, only 35 colonies being inside at present. But some years ago our late lamented friend, Dr. Miller, wrote me that if I placed bees on solid combs of honey and gave them no clustering space below the combs they would be sure to die before spring, in his opinion. I promptly prepared two colonies by giving them a bottom-board so close to the frames that there was barely a bee-space between. An entrance was given eight inches wide and only one-half inch deep. They were fed till they would take no more, and just a few days before going into the cellar they were again fed, so that I feel sure that they did not have a single empty cell in the hive. They were wintered in a cellar with 50 other colonies, with the temperature continually at 42° F., with quite a lot of moisture present at all times. What happened? All winter those two colonies had a cluster outside, possibly varying from a pint to a quart of bees. Not a sign of dysentery appeared in them, while many others in the cellar did show signs of this complaint. When they were carried out in the spring the boys remarked that these two were "asleep," and they were certainly two of the strongest colonies we had in the yard.

J. L. Byer.

Markham, Ont.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Long Line of Bee-keeping Ancestors I am sending you a photograph of my son Samuel, age 16. He represents the fifth generation of bee-keepers in our family. His great-great-grandfather used to help Queen Victoria's husband with his bees in England, and he invented a hive from which the

Samuel Sholl, a 16-year-old beekeeper, represents the fifth generation in a family of bee-keepers.

honey could be taken without destroying the bees. You may know how pleased I was when he took to bees just like the bees take to clover. Harold A. Sholl.

Bordentown, N. J.

Good Record in Extracting On page 724 of November (1925) Gleanings, Mr. Crane says, "Today two men with a power extractor can extract 2000 pounds in a day, and then go home whistling." My brother, a hired man, and myself have taken out, on several occasions 45 cases in a day with a six-frame hand extractor, and one day we actually took out 50 cases. This is three and one-third tons, or over 6000 pounds in a day, with a hand power extractor. I do not claim this is a record, but it shows what can be done with modern equipment if some one will "get in and step." I am 26 years of age and have been in the bee business eight years. I operate 700 colonies of bees and have never yet seen a case of foul brood. There has never been a case of foul brood in approximately 4000 colonies that we (four brothers) operate. Leslie Wedgworth.

Oracle, Ariz.

Honey Bath for Sick Pearls The following short item from Popular Mechanics for October (1925) is interesting. It is not likely that such a use for honey will increase the demand, but it does illustrate the unusual.

"Baths in newly gathered honey are recommended by a European gem expert to restore the luster to pearls that have grown dull. Treatments of 48 hours at two-week intervals for a period of about six months are said to produce the most satisfactory results, and the honey should be removed with alcohol instead of water." Everett Oertel.

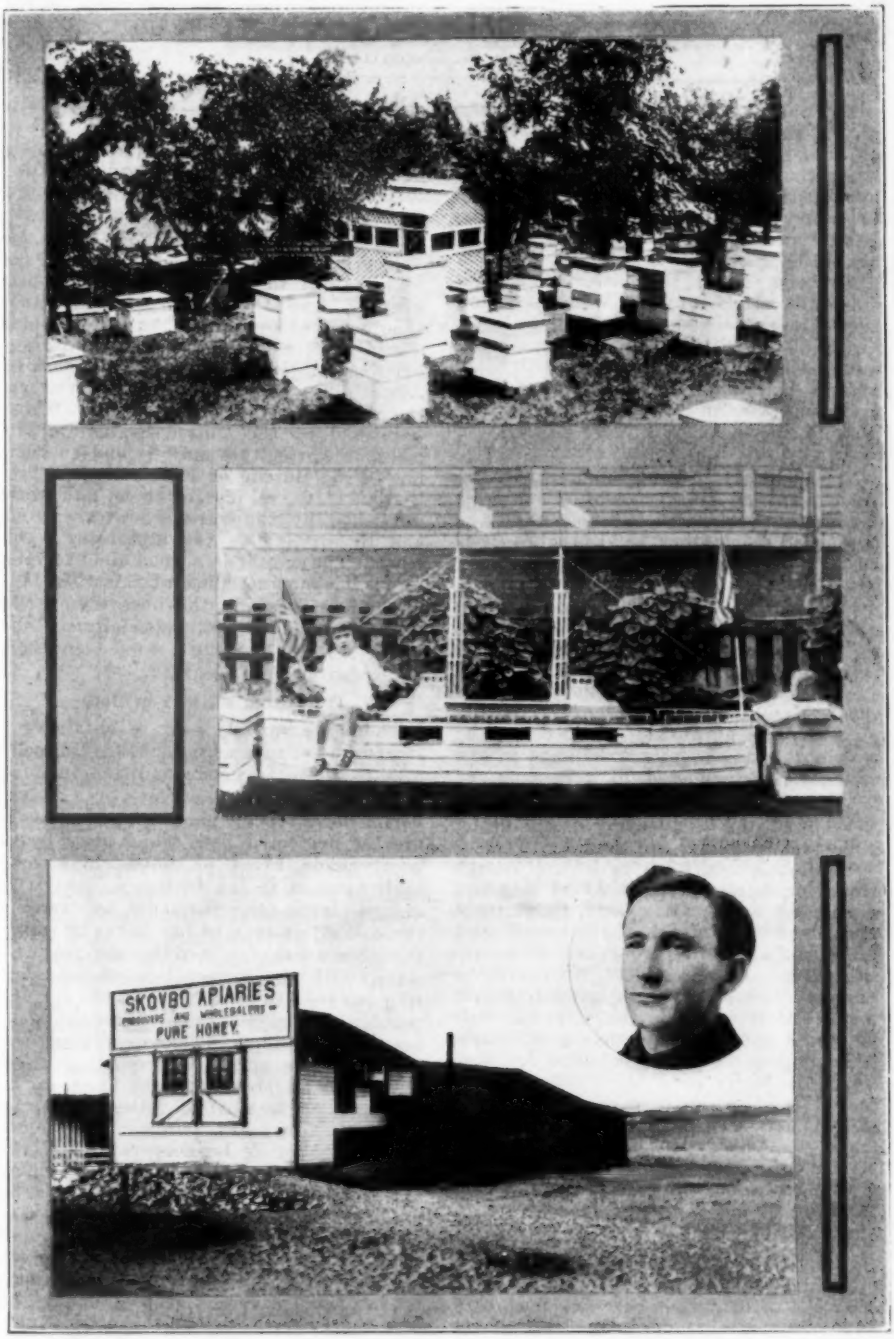
Ithaca, N. Y.

Skunks in California M. C. Richter's comments concerning skunks, on page 793 of Gleanings for December (1925) has called my attention to the words quoted from Circular 297. The original sentence in the manuscript read: "The German-Italian hybrid is a very good combination, having enough spirit to protect the colony effectively against tramps or other marauding skunks, etc."

Seriously, skunks are quite destructive to bees in many California locations. I know of a young man in a "not too good" location in Tuolumne County who has given up trying to keep bees on account of the continuous depletion of the colonies by real skunks. The use of pieces of fresh comb containing brood poisoned with a small amount of strychnine sulfate is a quick, reliable skunk poison.

Some are also taking exception to the numbers of colonies listed on page 3 of the same circular. We all know that the census figures, as far as bees in California are concerned, fall very much short of the actual number of colonies. However, all counties are presumably "censused" alike, so these figures give a fair basis for showing the distribution within the state. G. H. Vansell.

Davis, Calif.



(1) A cozy corner in the apiary of J. F. Dunn, Ridgeway, Ontario, Canada. (2) This model of a battleship is in reality a large beehive containing three strong colonies. The entrances are on the far side and therefore do not show in the illustration. The gunboat beehive was built by Wm. H. Hortsman, Chicago, Ill. Mr. Hortsman is a mail-carrier and works with the bees at spare times. (3) Central extracting plant of J. Skovbo, Hermiston, Oregon. The small insert is a likeness of Mr. Skovbo.

TALKS TO BEGINNERS

Geo. S. Demuth

For untold ages before man learned to record his ideas and thus leave a record of what human beings were doing and in what they were interested, there were honeybees and beekeepers and, therefore, beginners in beekeeping. Long before the Hindu poets wrote of the wonders of the honeybee, thousands of men and women filled with the enthusiasm that comes from the study of this wonderful and useful insect were prying into the mysteries of the life of the honeybee; and long before Vergil wrote his delightful verses explaining some of the former mysteries of the hive, enthusiastic beginners in beekeeping were deeply absorbed in this fascinating study.

The beginner of today undoubtedly derives infinitely greater pleasure from his study and work with the bees than the beginner of old, since he has in bee literature the experience of those who have gone before, and in the apparatus connected with beekeeping he has every facility for his study. These enable him to experience in a single season that which has required the accumulation of ages. It is not surprising, therefore, that the beginner of today is often carried away by his enthusiasm so far that he may not have the proper balance in the essentials of management necessary for best results in the amount of honey secured from the bees as well as the maximum in pleasure.

While a study of bees is well worth while for its own sake, beekeeping is also one of the most profitable of agricultural pursuits when the capital invested and the labor expended are taken into consideration. In these talks, which are to be published each month to and including the October issue, the emphasis will be placed upon the outstanding essentials of management of the colonies for best results in honey production. There is no reason why a beginner in beekeeping should not secure practically as much honey per colony as the experienced beekeeper provided he does not make some fundamental error in management. These talks are intended to help the beginner to avoid such errors.

Beekeeping Literature

The beginner will at first be somewhat confused in reading beekeeping literature unless he is already acquainted with some of the terms used in mentioning hives and hive parts as well as the tools used by beekeepers. A good way to overcome this is to write to a dealer in beekeepers' supplies asking for a catalog. A little study of the illustrations and descriptions of hives and hive parts as well as other beekeeping apparatus will quickly give the beginner a clear understanding of many of the terms used in beekeeping literature, as well as the function of the various parts of the modern beehive.

Every beginner should also have at least one of the standard books on beekeeping, and those who can afford it should have several of these. There is also a large amount of literature on beekeeping published by the Department of Agriculture at Washington and the various state agricultural colleges. Those published by the United States Department of Agriculture may be had by writing to the Bureau of Entomology, Washington, D. C., asking for them, and those published by the various states can be had by writing to the agricultural colleges. The winter is a good time to read up on beekeeping, since at this time it is impossible to study the bees themselves to any great extent, especially in the north where they are confined to their hives during cold weather.

Obtaining a Start in Bees

There are various ways of obtaining a start in bees, such as purchasing full colonies that are in good condition in good modern hives from a dealer or a neighboring beekeeper; purchasing full colonies of neglected bees which may be in poorly-made hives or have the combs built crooked in the frames so that it is impossible to take them out to examine the colony, or even in box hives in which the combs are fastened to the top and sides, with the expectation of transferring the bees to good hives in the spring; purchasing nuclei (small colonies) or bees in combless packages from the South in the spring and putting them into hives in time to build them up to full strength in time to gather a crop of honey this season; purchasing swarms from neighboring beekeepers during the swarming season, or, as many have done, catching a stray swarm which may be passing over. The last two methods are not to be advised since a beginner would then not come into possession of his bees until the midst of the season and would probably not secure a crop of honey the first season. By any of the other methods mentioned a full crop of honey can be secured the first season unless conditions in the locality are so unfavorable as to prevent this.

(Continued on page 46.)

JUST NEWS
Editors

The University of Wisconsin is offering a short course in beekeeping from January 5 to February 7 inclusive.

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A short course in beekeeping is offered by the School of Agriculture, State College, Raleigh, N. C., on January 19, 20, and 21.

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B. F. Kindig, president of the American Honey Producers' League, has resigned his position as State Apiary Inspector of Michigan. Mr. Kindig has not as yet announced his plans for the future.

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The management of bees for honey production, wintering, bee diseases, and marketing will be featured in the short course for beekeepers offered by the University of Minnesota, January 18 to 23.

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The University of Manitoba offers its fourth annual winter short course in beekeeping in the Department of Entomology, Mantioba Agricultural College, at Winnipeg, January 18 to 29.

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The annual convention of the American Honey Producers' League will be held in Cincinnati on Tuesday and Wednesday, February 2 and 3. The convention headquarters will be at the Metropole Hotel.

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The annual convention of the New Jersey Beekeepers' Association will be held at Trenton on January 14 and 15. G. H. Cale, of the American Bee Journal, is scheduled as one of the speakers from outside the state.

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A radio talk on bees and honey is being broadcasted on the first Friday evening of each month at about 8:10 o'clock, by Station WAAW, Omaha, Nebraska, the talks being given by F. M. Parsons, secretary of the Nebraska Beekeepers' Association.

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The Pennsylvania State Beekeepers' Association will hold its annual meeting in the Public Library at Harrisburg on January 20 and 21. W. J. Nolan, of the Bee Culture Division of the Bureau of Entomology, Washington, D. C., is one of the outside speakers.

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Two short courses in beekeeping in California have been arranged for this month. One is scheduled for Chico on January 22 and 23, and one at Santa Ana on January 26 and 27. Among the speakers at these short courses from a distance are James I. Hambleton, Apiculturist of the United States Department of Agriculture; Kenneth Hawkins, of the G. B. Lewis Company, and Jay Smith, the well-known queen-breeder. The complete program of these meetings may be obtained from G. H. Vansell, secretary of the California State Beekeepers' Association, Davis, Calif.

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The Ontario Agricultural College at Guelph, Ontario, Canada, is offering a short course in beekeeping from January 11 to 22. On January 20, 21, and 22 the subject of diseases of bees will be taken up from all angles, thus providing an opportunity for those planning to do apiary inspection work to make an intensive study in preparation. Dr. A. P. Sturtevant, of the Bureau of Entomology, Washington, D. C., is expected to be one of the instructors. A program of this short course may be had by writing to the Department of Apiculture, Ontario Agricultural College.

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The dates and places of all of the winter beekeepers' meetings as arranged by the League in the western states have now been fixed, the complete schedule being as follows: Lincoln, Neb., January 5 and 6; Thermopolis, Wyo., January 7 to 9; Billings, Mont., January 11 to 13; Olympia, Wash., at Olympian Hotel, January 15 to 16; The Dalles, Oregon, January 18 to 20; Chico, California, January 22 to 25; Santa Ana, Calif., January 26 to 27; Salt Lake City, Utah, February 1 to 3; Yankton, S. D., February 5 to 6, and Fargo, N. D., February 8 to 10.

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The annual meeting of the Ohio Beekeepers' Association will be held at Ohio State University February 4 and 5, 1926. Speakers at this convention will be Dr. E. F. Phillips, of Cornell University; Dr. A. P. Sturtevant, of the Bee Culture Laboratory, Washington, D C.; E. R. Root, Dr. Ernest Kohn, Chas. N. Poling, C. A. Reese, F. B. Moore, Dr. J. C. Hutzelman, and other local beekeepers. Much interest has been manifested recently in the beekeeping work at Ohio State University, and Miss Florence Naile, secretary of the association, who is also connected with the university, will explain this situation. The annual banquet will be held on Thursday evening. A large attendance is expected at this meeting.

GLEANED BY ASKING

Geo. S. Demuth

Dead Queen at Entrance

Question.—Several weeks after I packed my colony of bees I found a dead queen in the tunnel. Is there any way that I can tell from outside appearance if the colony is queenless—that is, on days that they are able to fly? I noticed several bees came in with loads of pollen after I found the dead queen.

Illinois. F. A. Boedeker.

Answer.—There is no way by which you can be sure that the colony is queenless at this season without opening the hive. This, of course, would not be advisable at this time, and even if the hives were opened and the combs carefully examined it is possible that a queen could be present and overlooked in the examination. The fact that bees were seen carrying in pollen is not conclusive evidence that the colony has a queen, since bees of queenless colonies will carry some pollen. It often happens that a colony rears a young queen to take the place of the old one, but does not kill the old one. Often both mother and daughter work together peaceably until the mother dies of old age. This may have been the case with the colony you mention, and it is quite probable that the colony has a queen.

Honeybees Not Native to America

Question.—Is the honeybee a native of America? Roy Henson.

Illinois.

Answer.—Authorities say that the honeybee is not native to America. The black bees, which are often referred to as native bees, were brought from Europe by the early settlers. After their introduction they multiplied rapidly and spread westward in many cases in advance of the white man. The Indians had no equivalent in their language for bees, honey, or wax, and after the introduction of the honeybee they referred to it as "the white man's fly."

Care of Honey Saved for Spring Feeding

Question.—Is there anything that I can do to prevent goldenrod and aster honey in full-depth combs from granulating? They will have to be stored in an unheated house. Will it be possible for the bees to use this honey for brood-rearing in the spring even if it does granulate? Francis D. Johnston.

Ohio.

Answer.—If this honey is stored where the temperature will vary greatly during the winter, there will probably be some granulation in spite of all you can do. It will keep much better if stored where the temperature is nearly constant. A dry basement would be a good place to keep these combs so far as preventing granulation is concerned. It is doubtful if this honey will granulate too hard for the bees to use for brood-rearing next spring. Some of it may be wasted by crystals being dropped on the bottom-board, but the loss in this way will not be great.

Fumigating Combs in Winter

Question.—Will fumigating combs at this time prevent moths in the spring provided they are stored in hive bodies and sealed at top and bottom? Alfred R. Flower.

New Jersey.

Answer.—For your locality it will not be necessary to fumigate combs at this time to prevent the damage from moths. All that is necessary is to expose them to freezing temperatures, which will destroy all of the eggs and larvae. However, freezing temperatures will not kill larvae of the wax moth if a large number of them have already developed before the advent of cold weather, since they would then generate sufficient heat to keep alive during ordinary freezing weather. Combs subjected to freezing temperatures at this time should be safe from moths if in a moth-proof container, but it would be difficult to pile up hive bodies in such a manner that the pile would be moth-proof.

Uses of Queen-Excluder

Question.—What are the main uses of queen-excluders and how are they used for each purpose? J. H. Clayton.

Mississippi.

Answer.—The term "queen-excluder" usually applies to the appliance used between hive bodies to prevent the queen from passing from one to the other, although in a broader sense the queen-excluding metal used in queen and drone traps and entrance-guards are, in fact, queen-excluders in that they are designed to exclude the queen. When a queen-excluder is used between hive-bodies it is usually placed between the brood-chamber and the super to keep the queen from the super. It is used chiefly in extracted-honey production for this purpose, not being necessary in comb-honey production except in special cases, such as on recently hived swarms when the brood-chamber contains frames of foundation only. The excluder has some other uses, such as in queen-rearing for the purpose of having queen-cells built in an upper story above the excluder while there is a laying queen below. It is also sometimes used to keep two queens in a hive, one queen being above the excluder and the other below. It is also sometimes used between the brood-chamber and the bottom-board to prevent the queen from going out with a swarm or to prevent drones from such colonies from flying when young queens are expected to mate. The excluder can be used in finding queens by running all

the bees of a colony through it, thus trapping the queen. Queen-excluding metal is used in queen and drone traps, in entrance-guards, in certain types of queen-cages, and in various ways about the hive where it is desirable that the workers shall pass and queens or drones be excluded.

Parentage of the Drones

Question.—Please explain as fully as possible the statement that a drone has no father but has a grandfather on his mother's side.

Alabama. Hoyt Bishop.

Answer.—One of the strange things about the development of the honeybee is that eggs that have not been fertilized will develop and produce drones, while eggs that have been fertilized produce workers or queens, according to the manner in which they are fed and the care by the workers during development. This peculiarity in development is known as parthenogenesis. It is found in several other insects besides the honeybee. You can readily see from this that the drone had no father but that he had a grandfather on his mother's side, since the mother had a father.

Disposition of Queenless Colonies

Question.—What can be done with a colony that has been queenless since about the middle of August?

Kentucky. Joyce Felts.

Answer.—As a rule, such colonies are of but little if any value. Much depends upon the amount of work the bees did during the fall. If there was a fall honey flow in your locality the workers were no doubt aged considerably by their activity at that time; but if there was no fall honey flow they may have remained quiet, thus saving their vitality to a considerable degree. As a rule, queenless colonies are less active than colonies having a queen, so these bees may not have aged too much to survive the winter. If there is a good number of bees left in the spring, you could purchase a queen from the South and probably build up this colony; but as a rule it is better to unite the remaining bees with some colony that needs more workers.

Size of Food-Chamber

Question.—Which do you think is better, the half-depth super using frames 4½ inches deep or the regular shallow extracting-super using frames 5¾ inches deep? Also, should ten frames be used in the regular ten-frame food-chamber or should they be spaced wider, using only eight or nine frames?

New York. Harry E. Norton.

Answer.—In some localities the half-depth supers may be large enough when used as food-chambers, but in other localities it does not hold enough honey for safety during some seasons. Where there is a dependable fall honey flow, no doubt the half-depth super will be large enough. But in many localities the fall honey flow is not dependable every year and in such cases the larger food-chamber is better. Much depends also upon the character of the honey flow. In some localities it closes abruptly, leaving the brood-chamber without much honey, while in other localities it tapers off toward the close, which causes the bees to store heavily in the brood-chamber. In such cases the food-chamber may not be needed. Many are now using the full-depth hive-bodies as food-chambers, thus having all their combs the same size. Most users of the food-chamber use the same spacing as in the brood-chamber. The wider spacing of combs is especially desirable in extracting-supers. A super of any given size will hold a little more honey when completely filled if nine combs are used than if the full set of ten is used. On the other hand, the brood capacity is greater when the full set of ten combs is used. Since the food-chamber may be used in part for brood-rearing in the spring, most beekeepers use the full set of ten combs.

Number of Colonies in One Location

Question.—How many colonies can be profitably kept in one yard? Also how far apart should the yards be placed so that they will not interefere with each other?

Iowa. George Lyons.

Answer.—The number of colonies that can profitably be kept in one place depends upon the character of the locality. In some cases several hundred colonies can be kept in one place without apparently reducing the yield per colony to any great extent, but such locations are rare. In most localities from 50 to 100 colonies are about as many as should be kept in one place. Apiaries can be placed within three or four miles of each other without seriously interfering, unless there is some peculiar character of the pasture which would cause the bees of both apiaries to work in the same fields.

Upward Ventilation in Cellar

Question.—Should the escape-hole in the inner cover be open or closed when colonies are wintered in the cellar? Should the outer cover be left on in the cellar?

Minnesota. I. W. Westlund.

Answer.—If the cellar is warm enough to prevent condensation of moisture within the hive, it is not necessary to provide upward ventilation. If the temperature of the cellar goes down low enough to cause condenstaion in the hive, the combs and inner walls of the hive will be kept dryer by upward ventilation. But this would cool off the hive so much that the bees would be compelled to generate more heat, which in turn would result in more moisture being given off, so that any great reduction in the cellar temperature would result in considerable condensation, even with the escape-hole open. The best remedy for condensation of moisture within the hives is to raise the temperature of the cellar.

BEES, MEN AND THINGS
(You may find it here)

"At the close of the Arkansas State Fair, a chain store bought the entire honey exhibit and paid a good price for it. Therefore we had no honey to return to the producers."—J. V. Ormond, Van Buren County, Ark.

"If we are to keep bees profitably in these days of high cost of supplies and low prices for honey, we must use up-to-date methods and produce large yields of honey at low cost."—F. M. Parsons in "Monthly Message of the Nebraska Honey Producers' Association."

"We have had an average season and the bees are going into winter in fine condition, except that for some reason they quit brood-rearing earlier than usual, although they had abundant stores. Whether this means a lot of weak colonies in the spring remains to be seen."—J. N. Clark, Benewah County, Idaho.

"I wintered my bees during the past two winters by covering tops, sides, and backs with clover chaff and straw, leaving the fronts of the hive unprotected. They came through nicely this way. For good wintering the colonies need plenty of honey and good queens. Of course, they begin brood-rearing earlier when wintered in this way than when wintered in the cellar."—O. H. Gibbs, Hillsdale County, Mich.

"I find some colonies go the whole season with but two or three cells of American foul brood and in no more than one or two combs, which makes me question if they are not able to keep it down by their own disinfection methods. I have removed the two combs from one such colony and am wintering it in a single brood-chamber. Another similar colony filling three brood-chambers I am carrying through to watch results in the spring."—Samuel Cushman, Cook County, Ill.

"The trend of conditions in Wisconsin is toward the 5-pound pail, and I believe that state-wide prices are going to be secured within a few years. Beekeepers who do not belong to the state association are following association prices and the 10-pound pail is now more or less standardized at $2.00, and the 5-pound pail at from $1.10 to $1.15. There is still plenty of honey being sold at less than these prices, but a trend for the better can be seen."—H. F. Wilson, Dane County, Wis.

"Just now, between 5 and 6 o'clock, the boys are tinning up syrup which I made with steam and pumped into honey tanks with the steam engine last week after finishing the late extracting. In three hours on Saturday I made up 4000 pounds of syrup and in the same time another day I made the same quantity. I watch my chance to make up a few batches when we have had a short day at a yard and the supply is running low. The boys stack the feed pails away in six-pail crates ready for the next load going out to a yard."—Morley Pettit, Halton County, Ont.

"I moved my bees from their winter quarters, which was on the southeast side of a house, but the next morning a lot of bees were at the old place. I thought I would try to make a colony from them and gave them a hive containing frames with starters of foundation. The bees all went into the hive and I thought my plan would work well, but the next morning all but a few went back to their new location."—Egon E. Salge, Bee County, Texas.

"I wonder if any one else has ever seen a bee with just one eye. I discovered one this summer, but didn't think to save it. This bee was alive and had just come in with a load. I never thought at the time that it might be interesting from a physiological standpoint or I would have saved it. We are having an exceptionally cold spell for this time of the year, and I am afraid some of the young brood will be killed."—S. R. Campbell, Walsh County, N. D.

"At the recent meeting of the Louisiana State Beekeepers' Association it was decided to suggest to the Departments of Zoology at Tulane University and Louisiana State University the advisability of making a survey of the honey-bearing plants of the state. Such a survey should be of value to the beekeeper in that it would enable him to predict with more or less accuracy the dates of honey flows for his locality."—Henry A. Stabe, East Baton Rouge County, La.

"The latter part of July a few bee-men around here were saying that they had never seen such a year for honey, and that they wished they had several times as many bees. Since then bees have not been able to gather enough honey to keep them and have had to use much of the earlier-gathered honey—so much of it that I fear a large number of them are very short for winter. I had to feed some of mine that were not full above and those that were full took much of it down."—Lewis S. Gillespie, Wirt County, W. Va.

A. I. Root's Story of His Own Life

And, behold, there was a swarm of bees and honey in the carcass of the lion.—Judges 14:8.

In the summer of 1875 I became interested in a new project and for fear it might be only another "glass-house" experiment I issued a supplement to Gleanings, feeling that the pages of the regular number should be occupied only with matter of known value.

Extracting honey is a laborious operation and a great portion of the labor involved is the necessity of carrying the combs from the hive to the extractor and back again. In order to have my forty-eight colonies located within a couple of yards of the extractor I determined on a double-walled, sawdust-packed, eight-sided building with three colonies to a side, and with entrances through the double wall by means of a two-inch tube. This would provide space for twenty-four colonies with entrances about two feet apart. Four feet above the floor I provided another tier of hives, thus making the forty-eight colonies in all. I proposed making the three hives all in one with only thin boards to divide the three colonies, and as all would be well protected from the weather a thin cloth covering would be ample protection. I planned to have the whole inside of the room warm in winter by retaining the animal heat from so many colonies closely packed.

When time to extract my plan was simply to take out the combs, and hand them to an assistant at the extractor after the bees were brushed back into the hive. Any bees taking wing would soon fly out of the two large doors, one on each side.

By June 28, 1875, I had my unfortunate glass house all removed and in its place the octagon house. It was a two-story building that was originally made to grind grain with a windmill for motive power.

By July 14 my 'house-apiary" was nearly ready for the bees. I decided to put but thirty-six hives in the room. As explained, there were eight sides, each six feet wide and seven feet high. The east and west sides were occupied by large double doors, and the others contained six hives each, three on the floor and three on a twenty-inch shelf three feet from the floor.

By July 28 fifteen colonies had been placed in the house apiary and more were being put in as fast as a queen was found emerged. The first two queens (which had emerged on the 20th) were laying by the 28th, and although I took no pains at all to make the entrances unlike either by paint or otherwise, there was no confusion. I took particular pains to see a queen take her flight. When she came back while she took a look into the entrances on either side, she seemed to say, "That is not my house, nor that one, but this one is," and then she glided into her own two-inch auger hole.

The walls were four inches thick and I worried a little about the bees having to crawl that distance, but I found they swept right in and alighted with their huge loads of pollen directly on the outside combs, the combs running parallel with the side of the building. I was astonished to find that bees were much quieter in a darkened room. When the doors were closed the room was as dark as ink.

When shaking the bees from the combs they generally crawled back into their own hive at once, but I had a few heavy colonies that started in a body and marched all over the walls and ceiling. However, if no other hive was open they almost immediately went back again when the room was darkened.

Notwithstanding the apparent success of the house apiary, I advised no one to invest in a similar building until I had had an opportunity of trying it at least a year, for there was a chance that it might turn out like the glass house, and I had not forgotten the money that that cost.

The First Winter in the House Apiary

In December the mice got into the house apiary, and I at once proceeded to make some mouse-guards out of pieces of galvanized sheet iron 2¼" square, large enough to cover the 2" auger hole entrances to the hives. In the sheet iron I punched two $\frac{5}{16}$" holes so close together that they cut each other, making an opening large enough for one bee. A galvanized tack held these mouse-guards in place.

In the old bee-house the bees were in the habit of getting out of their hives on a very warm day; but those wintered in the house apiary, having entrances to

the outside, seemed perfectly contented so far as I could see. After two weeks' time there were a few dead bees brought out of the house apiary, perhaps a dozen per colony on the average, but these undoubtedly died of old age, and were not an abnormal number for that length of time.

On February 12, 1876, bees were working on meal out of doors. I think it was the first time I ever fed meal in February. The sun shone very hot on the covers of the hives.

One colony I found dead in the house apiary. The bees had died of starvation, although there were combs containing several pounds each at the other side of the hive. It was quite a good-sized colony, but the bees were clustered on new combs and the hive stood right close to the door, which did not fit very tight. If the heavy combs had been placed next to the cluster or if the space had been contracted so that it would just hold the bees, no doubt I would not have lost the colony.

Trouble with the House Apiary

In the spring of 1876 I noticed the fashion young bees had of pouring out of the top of the hive when it was open for examination. This did no harm, except that when one was through working there was a shower of bees determined to return to their own hive and to the very spot they came from. Even after they were all driven away they would sometimes hang about the door for an hour or two, and it is doubtful whether they all regained their own hives if the entrances happened to be at a distance from the doorway. In case of hives out of doors it makes no difference where they get out, they always find their own entrance.

By May, 1876, seven colonies had died in the house apiary, five on the north and two on the south side. None of these colonies were very strong in bees except those that starved. In the house apiary it seemed such an easy matter to feed candy or sugar at any time that I was careless about the amount of stores, thinking that I could give more at any time in a few minutes.

When the house apiary was first built it was a novelty and it was a pleasure to have everything nice and exact. After a while it got to be something of an "old story" and then in stepped a besetting sin—a disposition to prefer working at some new thing. I was beginning to feel that I would like very well to try something else, but I realized that, if I was really unable to stick to what I then had on hand and do that well, I should deserve to lose the confidence and patronage of my friends and readers.

There were a good many bees on the floor of the house apiary, and to hear them snapping under my feet was enough to make me nervous, when I had been trying so hard to keep the floor clean. To be sure, the bees had no kind of business on the floor any way, but that spring they had taken the peculiar fancy of crowding out under the edges of the cloth coverings of the hives rather than going out by the entrance.

Although I had put sealed honey close to the cluster in every colony running short of stores in April, I discovered that of the thirty-six hives only eighteen contained live bees. Many of the colonies had starved with sealed honey plainly visible through the glass division-board, and a few had really used every particle in the hive and then lay dead in great heaps that seemed to say to me, "Why did you, with so much care and pains, bring us into existence only to let us die in such a shameful way just as the gentle April breezes were beginning to call us forth to activity?" The colonies had perhaps reared more brood than those out of doors, as there were great heaps of dead bees where there was but a small colony last fall. Those out of doors did not starve because they did not rear brood and exhaust their stores.

On May 9 the bees in the house apiary were dwindling so rapidly that I feared none would be left. Most of the colonies outside were building up, but a few of the weakest were going down with the well-known spring dwindling.

By May 18 conditions were much improved again. My whole apiary by dwindling had been reduced to 52 colonies, and then the weather changed and colonies with only a half-teacupful of bees began to build up. The house apiary, too, caught the inspiration caused by how honey, plenty of new pollen, and the soft balmy air, until bee culture seemed the very easiest thing in the world.

Talks to Beginners—Continued from page 40.

Purchasing Bees in Winter

While there is some risk in purchasing bees in January unless the colonies are first examined by an experienced beekeeper, this risk is reduced to a minimum if the beginner will insist on seeing the size of the cluster of bees in the hive and determine approximately how much honey is present. A good colony of bees at this time should have a cluster large enough to occupy the spaces between at least six combs and should have not less than 25 pounds of honey to carry them through until they are able to gather nectar from the flowers.

Classified Advertisements

Notices will be inserted in the classified columns for 7c per word. You must say you want your advertisement in the classified columns, or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy if credit has not been established previously.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.

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HONEY AND WAX FOR SALE

HONEY in 5 and 60 lb. cans. Van's Honey Farms, Hebron, Ind.

FOR SALE—Light amber clover honey. Lewis Klaty, Carsonville, Mich.

CLOVER honey in new 60-lb. cans. Sample, 15c. W. B. Crane, McComb, Ohio.

FOR SALE—Finest clover honey. Also amber. A. S. Tedman, Weston, Mich.

EXTRACTED honey for sale, clover, buckwheat and amber. C. N. Ballard, Valois, N. Y.

Choice light amber extracted honey, two 60-lb. tins, $13.00. J. G. Burtis, Marietta, N. Y.

LIGHT amber honey, part clover, 2 60-lb. cans, $13.00. I. J. Stringham, Glen Cove, N. Y.

NEW crop white clover honey in 60-lb. tin cans. Write for prices. D. R. Townsend, Northstar, Mich.

HONEY for sale, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

EXTRACTED HONEY FOR SALE—Clover, buckwheat, any kind of package. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

NEW crop white clover honey in 60-lb. cans. Prices on request. Sundberg Bros., Route 3, Fergus Falls, Minn.

MY entire crop of fancy and No. 1 white clover comb honey at wholesale prices. Geo. Morrison, Mandale, Ohio.

WILD raspberry and milkweed honey in 5 and 10 lb. pails and 60-lb. tins. Write for prices. Hubbard Bros., Boyne Falls, Mich.

FOR SALE—Clover, amber, and buckwheat extracted and comb. Write for prices. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Extracted, comb and chunk honey. Prices on request. Sample 15c. F. W. Summerfield, Waterville, Ohio.

EXTRA fine No. 1 clover honey in new 60-lb. cans. Sample, 15c. Edw. Hassinger, Jr., Greenville, Wis.

SOUR HONEY DEPT.

Things generally aint improved none. It got so cold me and Ab had to give up our woodshed bedrooms and bury our clothes as what we planned to protect us agin unreasonable creditors of ourn and had to beg our wives to let us sleep inside normal agin. It was awful humiliatin havin to ask. The Hardscrabble Creek flats also had all the mushrats flooded out permanent. So that financial is all gone. It's too cold for skunks to run any atall, and so we can't look for no financial from this almost unfailin source either. My credit aint so high as to try to strain it for a new coon dog and so my whole financial with such bright prospects as I had Nov. 1 to 15 has just bogged down to zero and some lower. The man whose dog as I returned to him with a skunk attachment on his front porch sofa is lookin for me with both his fists and a wild eye, Ab says. This man is a big healthy young man and high spirited, and so I have a added trouble as well as a consumin desire to keep him still lookin for me for a long indefinite period to come. Another class me and Ab don't mean to associate with much atall this winter if we see em first is the two hardware merchants, the feed store man and several grocery men now out of business. It makes extra walkin pritty often but on the whole it's a good plan. Then I had to make my wife all new promises after she got up in Ab's haymow over his cow stable to find the nest one of her pullets had stole and didn't find the supers of surplus honey I would have had up there sure only for that varmint of a rabbit-chasin low-down whelp of a dog as failed me for a coon dog and so I didn't have no financial to buy no honey to make my intenshuns good with. I never was so humiliationed afore or since as I was standin afore my good wife when she come down out of Ab's hay mow and no honey up there. I yet hope I will be given grace and strength and contrishun sufficient to write it all up for errin husbands elsewhere. It was a great lesson for me forever.

No one has backed me financial yet agin old Byer of Canady in the silver fox farmin business. But I say don't buy of old Byer whatever else you do. Wait for me. Doc Phillips of Ithaca University was here the other day and wouldn't go pardners with me on silver foxes. He's all highbrow anyway and spent his time yappin with Demuth about bee behavior et cetery and so he lost his chance to be my black fox pardner forever. What he really come for was what Hambleton and Sechrist come from

FOR SALE—Buckwheat mixed honey in 60-lb. cans. Also white comb and mixed comb honey. G. M. Brewer, Medina, N. Y.

FOR SALE—60 cases buckwheat honey, two 60-lb. cans in each case, 9c per pound, f. o. b. Robert Conn, Roaring Branch, Pa.

FOR SALE—White clover comb, also extracted. Send 15c for sample, saying how much you can use and will quote attractive price. Chris Holm, Genoa, Ill.

FOR SALE—Choice white and light amber Michigan extracted honey in NEW 60-lb. cans, case or carload. Sample, 15c. David Running. Filion, Mich.

CLOVER and basswood honey blended by the bees. Color white, body fine. Prices upon request. State amount wanted. W. A. Jenkins, Rock Port, Mo.

GOLDENROD and buckwheat comb honey in 4¼ beeway sections for sale at reasonable prices. Quality very good. H. E. Crowther, Jefferson, Ohio.

HONEY FOR SALE in 60-lb. tins. Clover, crystallized, at 13c per pound; clover, liquid, at 14c per pound. Hoffman & Hauck, Inc., Ozone Park, N. Y.

NEW crop fine quality clover honey, $13.75 per case of 120 lbs., 2 cans to case. Let us supply you early. W. D. Achord & Son, 320 Howard St., Findlay, Ohio.

FOR SALE—No. 1 white comb honey, $5.00 per case of 24 sections; No. 2, $4.00 per case; dark comb, dollar less; dark extracted, 9c lb. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Fine extracted clover honey in 60-lb. cans. Thoroughly ripened; also light amber. Price on request. Sample, 15c. Leland Farnsworth, Davison, Mich.

FOR SALE—Fine quality light extracted honey in 60-lb. cans, 2 cans per case. State how much you can use and I will quote price. L. S. Griggs, 711 Avon St., Flint, Mich.

FOR SALE—Clover honey in 160-lb. kegs; buckwheat in 160-lb. kegs, clover and buckwheat blend in 60-lb. tin cans. Write for prices. Geo. M. Sowarby, Cato, N. Y.

E. D. TOWNSEND & SONS, Northstar, Michigan, the largest extracted-honey producers in the central west. We wholesale our entire crop in 60-lb. cans. Your patronage solicited.

FOR SALE—Choice fancy 1925 crop white clover extracted honey in new 60-lb. cans, 11c. Sample, 10c. Amber, 10½c; also some comb honey. Write for large-lot prices. Edw. A. Winkler, Joliet, Ill.

FOR SALE—Honey in 60-lb. cans. Sweet clover, basswood, white clover, buckwheat and other flavors. Tell us what you want. Beekeepers who need more honey for their trade, and solicitors should write us. A. I. Root Co. of Chicago, 230 W. Huron St., Chicago, Ill.

HONEY FOR SALE—For the beekeepers whose supply may be short this season. We have the choicest extra quality sweet clover, fine white clover, alfalfa, and some mesquite that we can offer our friend honey-sellers who may be short. Also comb, all grades. Write for prices. The A. I. Root Co., Medina, Ohio.

RASPBERRY HONEY was left with the bees until thoroughly ripened is thick, rich, and delicious; unexcelled for table use. In new 60-lb. cans, 15c a lb.; 10-lb. cans by mail, postpaid, $2.50 each. We have some amber colored fall honey with a thick heavy body, the richest, sweetest honey we ever tasted, in 60-lb. cans for 10c a lb. A sample of either kind, 15c. Elmer Hutchinson & Son, Lake City, Mich.

Washington for—just to snoop around and get my secrets on my winter-hunger resistant strain of bees. He didn't get a word out of me so he didn't.

But one great comfortin fact hangs by me. My experimentation on the winter-hunger resistant strain of bees goes on triumphant. The cornstalks is lyin true as steel around the hives and there aint no buzzin and no uneasiness inside atall. They must be doin the finest ever. Just wait till spring. Won't I have it on them bee smart alecs everywhere? This thought is all as what bears me up now.

I am back at Root's lumber yard again for all winter, I suppose, wearin and bearin the cross of hard labor any way till fishin opens up again next spring all because of my financial. My spirits is awful low and so is Ab's. Why did the creek flat have to drownd out the same time the whelp of a dog showed hisself up so, and the skunks all hole up tight too? The smartest man I ever knew said oncet that when a feller gets to tobogganin everythin seems greased for the occashun. He said it.

E. R. Root's slab pile is the same.

I give way now to others who are partly welcome in this here department.

* * *

A man as what is some man out at Bartlett, Ill., and signs hisself "The Grumbler," writes as follows to wit:

"For a long time I have read with ever increasing interest of the experiences and experiments of 'Old Drone' in developing his now world famous strain of 'winter-hunger resistin' bees. But like all great men of this type, he has, to my mind, entirely overlooked the one great issue in the beekeeping business. Bees that will live through the winter without stores and without protection may be all right for a coon hunting gentleman, but to us amateurs who are trying to produce a 200-lb. average, about all the pleasure we derive from the beekeeping game is in seeing them lap up the syrup in the fall of the year, and, after they have been fed, to put them to bed, so to speak, for the winter. Now I have an idea, which will put 'Old Drone' in the Ford billionaire's class, if it works, to say nothing of writing his name high on the scroll of fame, also heading the list of great discoverers not even excepting Kid Columbus.

"Every person I meet who is interested in bees in a general way, always asks me this question: 'Do you ever get stung?' and when I inform them that about 20 stings a day is a fair average they right away get over the idea of keeping bees. Now, in order to bring these timid, would-be beekeepers into the fold, I have been working on a scheme of developing a race of STINGLESS BEES and I am now offering to trade this idea to 'Old Drone' for one of his cold-and-hunger resisting queens.

"Being of a modest retiring nature myself, I do not crave notoriety, or the spotlight of fame, and will feel well repaid for my hard work and brain fag developing this new breed, if I should live to see 'Old Drone' come into his own, so that he will no longer be compelled to put a fast one over on his bitter half when the open season on coon arrives, or to be compelled to furnish an alibi when he wants to go fishing. It seems to me that if 'Old Drone' would quit worrying about selling sil-

BUCKWHEAT honey, new cans, 120-lb. lots, 8c. Cash with order. John Witnauer, East Amherst, N. Y.

OUR HONEY BULLETIN sent on request. Quotes you advantageous prices on large and small lots. Shipments from our stock here or direct from the producer. White clover honey of heavy body, packed in 60's. Also some autumn. Send us a card today. The A. I. Root Co. of Iowa, Council Bluffs, Iowa.

HONEY AND WAX WANTED

WANTED—Comb and extracted. J. E. Harris, Box 178, Morristown, Tenn.

WANTED—White clover basswood extracted honey in ton lots or more. J. C. Abbott, Northampton, Mass.

WANTED—White clover comb honey. Glass-front case preferred. E. W. Peirce, 345 Cliffwood Ave., Zanesville, Ohio.

BEESWAX WANTED — Highest market prices paid. Cash or in exchange for supplies. Write us for quotation before shipping elsewhere. The A. I. Root Co., Medina, Ohio.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

BEESWAX WANTED—We are now paying very high prices for beeswax, both cash and trade. Write us for quotations and we will be very gad to quote you f. o. b. Hamilton or f. o. b. your shipping point. Dadant & Sons., Hamilton, Ill.

FOR SALE

FOR SALE—Bargain in 8-frame Root power extractor. Porter C. Ward, Elkton, Ky.

MAKE queen introduction SURE. ONE SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

SECTION boxes, comb-honey supers, Modified Dadant and Standard hives, bottom-boards, covers, etc. New Lewis goods, slightly damaged by smoke and water. Attractive prices. Adams & Myers, Ransomville, N. Y.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—A home in the beautiful city of Riverside, California. Located on boulevard. Place consists of good-sized house with outbuildings and extracting plant; fruit and flower garden of about one acre. If party desired the bee supply business could also be included. Detailed information will be furnished to prospective purchaser by owner. G. Lohrli, 403 Palm Avenue, Riverside, California.

WANTS AND EXCHANGES

WILL trade package bees for white honey. Van's Honey Farms, Hebron, Indiana.

ver foxes and would use his talents developing a new strain of winter-hunger-defying-stingless bees, that he will not only be conferring a great benefit on humanity in general, but upon beekeepers in particular. If he decides to accept my generous offer, I should like to introduce the afore-mentioned queen about the first of February in order to test her winter-resisting qualities. Last year we had a temperature of 28° below zero at about that time of the season."

I accept except I wont trade no queen with you until I see the stingless queen introduced. Bring her on Feb. 1 next. Bring her on sure, and I will share our honors together and make Doc Phillips and Morley Pettit and Demuth and E. R. Root look like nothin alongside us both. I welcome all real forrard-lookin progressive beekeepers. You meant just exactly my "bitter half," did you, Mr. Eldred? Illinoy aint any too far away to live if she sees it.

* * *

R. B. WilLson of New York State with his stuckup name comes along tryin to asperse the Drone family as follows to wit:

"Dear Old Drone:—I suspect I've run down one of your kinsmen, if any of your kinsmen have ever aspired to a higher education. At any rate, this chap, altho a professor of chemistry at one of New York's institutions of advanced learning, lives atop a mountain overlooking Whaley Lake in Dutchess County, N. Y. He enjoys the reputation of knowing the bunks of all the sizeable fish in the lake and as for ability to catch them, he has no peer in that country.

"How come the writer to suspect his relation to you, was by the answers he gave to certain questions asked at the Dutchess County Beekeepers' Associtaion picnic on Aug. 28 last. The questions, twenty of them, were printed on a paper and the members answered them as best they could for certain prizes that were offered to the winners. Here is the incriminating evidence:

"Question: Is granulation a test of the purity of honey?

"Answer: Bet your life it is.

"Question: Where should samples of diseased brood be sent for diagnosis?

'Answer: St. Luke's hospital.

"Question: What is lacking when cappings on honey look watery.

"Answer: A sponge.

"Question: Is 25 lbs. of honey a safe amount to leave with colonies in the fall?

' Answer: It depends on your neighbors.

"Question: What is a drone's nearest male relative?

"Answer: A stock yard bum.

"And so on for twenty questions. So you see what with this and the fact that I found out that he lives in the city only when the snow gets too deep for tracking coon, and the ice too thick for convenience in using tip-ups, I became suspicious. Despite all this, he and his household are delightful folks and in case I'm wrong and you are not kin, it might pay to approach him anyhow for an invitation to fish with him.

"Honest and truly yours,
"R. B. Willson."

Your own first sentence and the last answer of the highbrow smart alec you quote from is insultin to the whole Drone family, and I wont fish with neither of you till you both eat them words and eat

BEES AND QUEENS

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease, or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

UNTESTED Italian queens, $1.00 each. Autauga Apiaries, Autaugaville, Ala.

QUEEN BEES in season, $1.00 each. Graydon Bros., Rt. 4, Greenville, Ala.

1926 PACKAGE BEES—Pure Italians. Write for prices. J. J. Scott, Crowville, La.

WHEN IT'S GOLDEN, IT'S PHELPS. C. W. Phelps & Son, Binghamton, N. Y. See our advertisement on page 55.

THREE-BAND Italian bees and queens. See ad on page 63. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

HAVE you tried the famous Carolina queens? If not, write for circular. Carolina Bee Co., W. O. Curtis, Mgr., Graham, N. C.

LEATHER-COLORED Italian queens, $2.00 until June 1; after, $1.00; tested, $2.00. A. W. Yates, 15 Chapman St., Hartford, Conn.

SHE-SUITS-ME queens. Untested 3-banders, $1.00 each; 25 or more ordered in advance, 75c each. Safin cage with initial order. Allen Latham, Norwichtown, Conn.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1926 ready free. Dr. White Bee Co., Sandia, Texas.

THREE-BANDED Italian queens. Package bees for 1926. Gentle and good honey-gatherers. Everything guaranteed. Write for price list, which gives full information. Taylor Apiaries, Luverne, Ala.

GOLDEN ITALIAN queens for sale, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. F. D. No. 3, Ala.

BRIGHT American Beauty Italian queens and bees. Untested queens, $1.00, 3 or more, 75c each; $8.00 a dozen. Three-frame nuclei, $5.00. Guarantee safe arrival. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

BOOKING orders for high-grade three-banded Italian bees and queens, 2-lb. pkg., $4.50, discount on quantity. Select untested queen, $1.00; $10.00 per dozen; select tested queen, $1.50. Inspector's certificate with each. J. Allen, Catherine, Ala.

SUPERIOR ITALIAN BEES AND QUEENS. Get our prices on package bees and queens for 1926 delivery. No disease. We guarantee bees and service to please you in every detail or your MONEY BACK. W. C. Smith & Co., Calhoun, Ala.

BESIDES producing package bees in the South, I buy and sell many hundred packages from different breeders. Here is a good buy: Two hundred 2-lb. combless packages, with queens, from an old shipper in eastern Georgia, at only $3.50 each. An even hundred or more at $325.00 per hundred. E. D. Townsend, Loreauville, La.

FOR years we have been shipping thousands of pounds of bees all over U. S. A. and Canada. Booking orders for spring shipping. Write for free circulars telling about a customer gathering 43,000 pounds of honey from 100 colonies of bees this past season. Just think! 430-lb. average. Ault Bee Company, Box 98, Weslaco, Texas.

em clean. I aint sure about your last sentence either. You're goin to be in old Byer's class with me just the first thing you know.

* * *

A happy New Year especially to you as what sent me a Christmas present. Aforetimes some as what forgot to send me Christmas presents at Christmas time sent me New Year's presents up to even Feb. 1 next. OLD DRONE.

PACKAGE BEES and QUEENS—Pure Italians, beautiful, gentle and good honey-gatherers. We solicit your patronage on the merits of quality, service, and price. Crenshaw County Apiaries, Rutledge, Ala.

BARGAINS in bees for spring delivery. Finest Golden Italian queens, hybrid workers. Astonishing saving in price. Get my square deal offer by mail. Iron-clad guarantee. Spencer Bee Farms, 2436 Fern St., New Orleans, La.

Three-banded Italian queens. Package bees. Untested queens, 1, $1.00; 6, $5.00; 12, $9.50; 100, $75.00. Tested queens, $1.50 each. Write for price list on package bees. Safe arrival, satisfaction guaranteed. Taylor Apiaries, Lock Box, Luverne, Ala.

DON'T place your orders until you have our new price list. Our bees are inspected regularly. We use no honey in the candy in shipping cages. Special low prices on black or hybrid bees with pure Italian queens. See display ad. A. J. Heard, Wellston, Ga.

HERE is another good buy: 500 3-lb. packages bees, with queens, shipped on a comb of sealed brood, from an old shipper in central Louisiana. Only $4.00 each. If you prefer a 4-lb. package, add another dollar. No disease ever. Address E. D. Townsend, Loreauville, La.

MANY prefer a combless package: I have bought 300 2-lb. packages with queens in central Mississippi that I can sell at only $3.25 each. A shipper of experience. Safe delivery. A good buyer will not let such "snaps" pass. E. D. Townsend, Loreauville, La.

BREEDING stock superb: TOWNSEND'S ARISTOCRATS (Shaw Foundation). A three-banded Italian unsurpassed. Breeding queens from five to twenty-five dollars. Speak for yours while the supply is good. E. D. Townsend, Loreauville, La., "Where the good queens come from."

QUEENS—When you need a good queen you may be sure you will get one of Laws' best by return mail. Can furnish every month in the year. Better requeen those colonies that have paid you least, and do it this fall. Price $1.00 each. W. H. Laws, Box 505, Wharton, Texas.

ATTENTION, NORTHERN HONEY PRODUCER—ST. ROMAIN QUALITY BEES ready for 1926 season. I am in position to furnish several carloads of nuclei and pound packages at a very reasonable price. Shipping season starts April 1, 1926, and all bees are absolutely free from disease. I furnish health certificate with each shipment, also guarantee safe arrival. All bees shipped on comb of emerging brood and honey for feed in transit, also combless packages, if customer desires. Prices as follows: 1 2-lb. pkg. with queen, $3.00; 1 3-lb. pkg. with queen, $4.00; 1 4-lb. pkg. with queen, $5.00. Large orders will be given special attention. Address John St. Romain, Marksville, La.

IMPORTED three-banded Italian queens, the kind that gets the honey. Safe arrival and satisfaction guaranteed. Write for prices. G. E. Whittle, Mussel, Ala.

EARLY package bees, select three-banded Italian queens. Most northern breeder in California. It's an exclusive business with me, not a sideline. J. E. Wing, Cottonwood, Calif.

GOLDEN Italian queens and nuclei for 1926 (the kind that gets the honey). Price, untested, $1.00 each; 6, $5.00; 12, $10.00; $75.00 per 100. 2-frame nuclei with queen, $4.50 each. Safe arrival guaranteed. E. F. Day, Honoraville, Ala.

A BARGAIN IN BEES—We have an outyard of hybrid bees from which we offer package bees with pure Italian untested queens. A very good buy. Will make very low prices on large order lots from 50 to 500 packages. Write at once. The Louisiana Modern Apiaries, Bunkie, Louisiana.

FOR SALE—700 colonies of bees, big extracting honey outfit in 8 yards. A little disease, 10 acres of land, 8 lots, 8-room house, 2-car garage, honey-house. Buildings all new. Excellent location and healthy climate. If you have the money to swing a big deal come and look this over. Will sell including a honey crop or without. E. W. Fox, Fruitdale, S. D.

130 COLONIES of Italian bees equipped with 3½ stories each for the production of extracted honey, about 75 supers for comb honey and portable extracting outfit. Unlimited bee pasturage. Excellent location for package bee industry. Guaranteed free from disease. Priced at only $1500. Write for particulars. J. J. Patton, Foster's, Alabama.

ITALIAN bees and queens—Honey Girl strain. 3 lbs. bees with queen, $4.25 per pkg.; 10 to 24 pkgs., $4.10 each; 25 or more, $4.00 each; 4 lbs. bees with queen, $5.25 per pkg.; 10 to 24 pkgs., $5.10 each; 25 or more, $5.00 each. Guarantee safe arrival subject to bad order receipt. Certificate of inspection with each shipment. Highest quality. Prompt service. Mayeux Bee Co., Hamburg, La.

SUPERIOR three-banded Italians, bred for honey, prolific, vigorous and hardy. Two-pound package with queen, $4.50; 5 2-lb. packages, $21.25. 25 per cent with order. Balance before shipment. Book your orders early to avoid delay. A trial order will convince you. Satisfaction guaranteed. Write for price on larger quantities. The Shoffner Apiaries, Liberty, N. C.

TRY "Dalton's Introduced-Laying-En-route-to-You" Queens with packages. 2 Hoffman frames brood, bees, and honey; two additional pounds bees shaken in. Queen introduced and laying as she travels. All Italians. Best and biggest package in south. 20 per cent books for May delivery. Send for December Association publication, giving Louisiana certified advertising of bees and packages. Jes Dalton, Bordelonville, La.

MISCELLANEOUS

WILL trade radio for white honey, or what? Van Wyngarden, Hebron, Indiana.

CHINCHILLA and Angora fur rabbits. Price list. West Park Nursery, Appleton, Wis.

WANTED—Location and bees in western Minnesota or eastern Dakotas. B. Morehouse, 1928 Aldrich So., Minneapolis, Minn.

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read, and treasured. Will it not appeal to you? Specimen copy free from the publishers. Send us a postcard today. It is well worth your little trouble. The Apis Club, Benson, Oxon, England.

HELP WANTED

WANTED—Beeman for my Colorado apiaries. W. J. Stahmann, Mesquite, N. M.

WANTED—Experienced beekeeper. Season starts April 1. Wages or share basis. J. D. Beals, Oto, Iowa.

WANTED—Young man for season of 1926 for shop and bee work. Start early in season. Reference required. Fred D. Lamkin, Poplar Ridge, N. Y.

WANTED—Two industrious young men with good habits to work with bees and a little farm work the coming season. N. L. Stevens & Son, Venice Center, N. Y.

WANTED—An experienced queen-breeder for the season of 1926. Give references and name salary demanded in first letter. M. C. Berry & Co., Box 697, Montgomery, Ala.

WANTED—Experienced comb-honey man for season of 1926 to manage 300 colonies bees, beginning March 15. Also helper for three months. Reference. R. S. Becktell, Rifle, Colo.

WANTED—Young man to learn queen and package business. Good opportunity for the right man. Will exchange references. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

WANTED—Dependable young man of good habits to work with bees in outyards. Season of 1926. Board and lodging provided. State particulars. Archie Coggshall, Groton, R. F. D., N. Y.

WANTED—One or two men to work with bees for the 1926 season. Experience and ability to operate motor truck desirable. No cigarette smoker wanted. Have house and garden for married man. State experience in bees and wages expected. E. L. Lane, Trumansburg, N. Y.

SITUATION WANTED

WANTED—Young man with some experience wants position with some large producer in southern states. Alfred LeMay, 421 4th Ave., North, Wisconsin Rapids, Wis.

SINGLE man, age 23, experienced, wants work with queen-breeder or package-shipper anywhere. Can furnish references. Ernst Ehrgott, 116 Harmon St., Milwaukee, Wis.

STEADY position with experienced beekeeper in the south, but would take position in north, east or west. Have had four years' experience with bees. Will work for $20.00 per month. Louis Marsalek, Walloon Lake, Mich.

MR. QUEEN BREEDER:

Should you need some good queen-mating hives, let's get together at once. Here is what we have to offer: 300 slightly used, nailed and painted double queen-mating hives with cypress bottoms, metal roof covers, each hive divided into two equal compartments by a tight-fitting division-board, each compartment taking a half-width inner cover, the two hive entrances facing in opposite directions, the hives taking standard frames and easily convertible into regular ten-frame standard hives by removing division-boards.

These hives are the same as we use in our own queen-mating yards and the only reason we have them to offer is that we made up more than we can use to advantage at present.

If interested we will send you a sample hive free of charge. If not satisfactory return at our expense. Price $2.25 each f. o. b. Medina. **The A. I. Root Co., West Side Sta., Medina, O.**

Bee Wise!

USE HA STANDARD

HONEY JARS

Your Sales for 1926 Will Increase by the Adoption of

HAZEL-ATLAS

Honey Jars

IDEAL PROPORTIONS

"They Simply Cannot be Improved Upon"

DISTRIBUTORS:

The A. I. Root Company,
Medina, Ohio.

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Ozone Park, N. Y.

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Grand Rapids, Mich.

The A. I. Root Company of Iowa,
Council Bluffs, Iowa.

A. I. Root Co. of St. Paul,
St. Paul, Minn.

A. I. Root Co. of Syracuse,
Syracuse, N. Y.

Hazel-Atlas Glass Company

Wheeling, W. Va.

TOO LATE TO CLASSIFY

HONEY—120 lbs. to case. Chas. E. Schneider, Irvington, Nebr.

FINEST clover honey in 60-lb. cans. Prices on request. Irvin R. Van Devier, Medina, Ohio.

WANTED—Beekeeper for season of 1926, April 1 to Nov. 1. Bee-Dell Apiaries, Earlville, N. Y.

FIREWEED-RASPBERRY HONEY—In new 60-lb. cans. Write for prices. L. C. House, Stambaugh, Mich.

NEW crop clover and buckwheat honey in new 60-lb. cans, 160-lb. kegs and 5-lb. pails. Write for prices. H. B. Gable, Romulus, N. Y.

FOR SALE—Choice white and light amber extracted honey in new 60-lb. cans. Prices and sample on request. Kenneth Connors, Filion, Mich.

WHITE clover honey, new, 60-lb. cans, one to three cases, 11½c; 3 cases or more, 11c per lb. Sample, 20c. Hoehn & Honigford, Ottoville, Ohio.

HONEY FOR SALE—Buckwheat extracted, 120-lb. case, $12.00; 12 5-lb. pails, $7.20; fine No. 1 buckwheat comb, $4.00 per case in carrier lots. Paul D. Thompson, Linesville, Pa.

FOR SALE—Cowan 2-frame extractor in very good shape. Also some volumes of Gleanings and some single copies of it and some other bee papers. Nic Klein, Hudson, Iowa.

BEEKEEPERS—Send for our special reduced prices on Standard hive bodies, supers and frames. Catalog and price list free. Schmidt Bee Supply Co., 1420-22 Hager Ave., St. Paul, Minn.

FOR SALE—Buckwheat extracted honey in 60-lb. cans. A few cans extracted honey for baking purposes. 75 cases comb mixed clover and fall flowers. Bee-Dell Apiaries, Earlville, N. Y.

FOR SALE—Water-white clover honey, finest in the world, in five-gallon cans, two to the case. Lots of 10 cases or more, 10c a pound and smaller lots, 11c. Prices f. o. b. Gordon, Nebr. M. C. Berry & Co., Box 697. Montgomery, Ala.

COMB HONEY FOR SALE—Fancy white comb honey, $4.80 per case; No. 1, $4.25; No. 2, $3.75 per case of 24 sections. Well cleaned and graded by the Root system. No re-grading necessary. Gathered from alsike, white or sweet clover, none finer. Packed in carriers of 6 or 8 cases. H. J. Walters, Burgoon, Ohio.

NOTICE—Our 1926 circular price list is now ready for distribution. We now rear only 3-banded Italian queens. Our queens for 1926 will be reared only from record-breaker mothers. Our "Mrs. Manitoba Wright" has an authentic record unparalled for the short season—646½ pounds with one increase, spring count. She made a scale record of 25 pounds in one day. M. C. Berry & Co., Box 697, Montgomery, Ala.

FOR SALE—Finest flavor clover extracted honey, 10c lb. in 120-lb. cases. Send for sample. T. J. Rowe, Northstar, Mich.

WANTED—50 or 100 shallow extracting supers, 10-frame, with frames and combs or without. Give price delivered here. Frank Hill, Sabetha, Kansas.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same; also send for my cut price circular on cans and pails for honey containers. A. W. Smith, Birmingham, Mich.

WANTED—Helper in extensive beekeeping business for 1926. Give full information about yourself, when you can start, how long you can work, and wages expected, in first letter. M. C. Tanquary, Box 361, Fargo, N. Dak.

FOR SALE—Hulled, scarified, mixed white blossom annual and biennial sweet clover seed, 5 and 10 lb. lots, prepaid, 25c a pound; 25 to 50 pounds, express prepaid, 20c a pound, and 100-lb. lots, express collect, $15.00. M. C. Berry & Co., Box 697, Montgomery, Ala.

FOR SALE—All bees and equipment for 100 colonies with location for 1000 colonies. Bees free from disease. Location best in U. S. Outfit complete and new last spring. Record production this year 440 lbs. average. Quick sale or none. S. F. Lawrence, Dwight, N. Dak.

GOLDEN QUEENS AND BEES—Queens that are bred for business. A 1-lb. package with queen, $3.00; a 2-lb. package with queen, $5.00; a 3-lb. package with queen, $7.00. Selected untested, $1.00; tested queen, $2.50. Deposit your order now so that you can get your queens and packages when you want them. Only one-fourth cash down. E. A. Simmons, Greenville, Ala.

SAVE MONEY ON FRAMES AND FIXTURES FOR YOUR SUPERS

Hoffman self-spacing frames, per 100...$4.75
Unspaced frames, per 100..... 4.25
Shallow self-spacing frames, per 100.... 3.50
Section-holders for 4¼x1⅞ supers, per 100 ..... 3.25
Scalloped separators for above supers, per 100 ..... 1.45

E. GRESSMAN, HAMBURG, NEW YORK

NEW CATALOG READY
BEEKEEPERS' SUPPLIES
Root's Goods of High Quality
Three ply foundation, standard stock of supplies kept on hand for prompt shipment. Send us your inquiries and orders early for quick action.
J. NEBEL & SON SUPPLY CO.
Montgomery County High Hill, Missouri

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D.C.

Book Your Orders Now for Package Bees

Safe Arrival Guaranteed. Free Circular

Two-Pound Package Bees, $2.50. Young Queens (1926) $1.00.

The Loveitt Honey Co., 602 N. 9th Ave., Phoenix, Ariz.

Bee Supplies That Are Made to Satisfy

The three points of Rusch Service that are keeping old customers satisfied and bringing new ones are:

RIGHT PRICES,
REAL SERVICE,
HIGHEST QUALITY.

A trial order will convince you. Write for our catalog.

A. H. Rusch & Son Co.
Reedsville, Wisconsin

HONEY PAILS

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
WILKES-BARRE, PENNA.

64 BREEDS Chickens, ducks, geese and turkeys. Pure-bred, high quality, hardy and most profitable. Fowls, eggs, incubators, brooders; lowest prices. *America's great plant.* At it 33 yrs. Fine new 100 page book and catalog free.
R.F. Neubert Co., Box 884, Mankato, Minn.

4% BANKING BY MAIL

THE MOMENT you begin depositing your savings **BY MAIL** in this bank you have the satisfaction of knowing that your money is in an institution conducted primarily in the interests of its depositors.

THE HOME OF THE HONEY BEE

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO.
E. B. SPITZER, PRES. E. R. ROOT, VICE PRES. H. E. AYLARD, CASHIER

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

Supplies--Queens--Foundation

W. T. Falconer Mfg. Company
Falconer, New York (near Jamestown)
"Where the best beehives come from."
Ask for catalog. *Booklet, "Simplified Beekeeping for Beginners," free.*

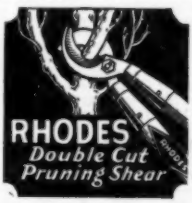
Beeswax

WE PAY THE BEST MARKET PRICE

Write for prices and shipping instructions.

The A. I. Root Co.

Medina, Ohio



Cuts both sides of limb-- ***Does not bruise bark***

Most powerful pruners made. Used throughout world. All styles, all sizes. Shipped postpaid. Write for booklet. Rhodes Mfg. Company, Grand Rapids, Mich. 328 S. Division Ave.

VICK'S *Is now ready* **GARDEN & FLORAL GUIDE** *for* **1926 FREE**

For 77 years a recognized authority on vegetable, flower and farm seeds. Lists the best of the old and many new varieties and tells how to grow them. **Send a post-card for your copy today.**

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A new cultivated fruit

BIG profits for the commercial grower and a delightful fruit for the amateur. Berries grow over one-half inch in diameter. Delicious. Practically seedless. *All varieties carefully selected, tested and named.* Bushes vigorous and heavily productive. Write for information.

WHITESBOG BLUEBERRY NURSERIES

Headquarters for Purebred Blueberry Plants

JOSEPH J. WHITE, INC.

Box X Whitesbog, N. J.

FOR YEARS WE HAVE BEEN SHIPPING THOUSANDS OF POUNDS OF BEES ALL OVER U. S. A. AND CANADA

Booking orders now for Spring shipping.

WRITE FOR FREE CIRCULARS telling about a customer gathering 43,000 pounds of honey from 100 colonies of bees this past season. Just think! 430-pound average.

AULT BEE COMPANY, BOX 98, WESLACO, TEXAS

Phelps Famous Golden Queens

Forty-five years of production, elimination, and selection has evolved a strain of queens as good as any, excelled by none. **GENTLE, PROLIFIC, HONEY-GATHERERS.**

Untested, $2 each, six for $10; $18.00 a dozen. Tested, $5 each. Breeders, $10 and $20.

TRY THEM

C. W. PHELPS & SON
BINGHAMTON, N. Y.

Very Low Prices on Package Bees

We are better prepared than ever to give you prompt service. Fast trains to all principal points. This means fresher bees when they reach you. Write for 1926 prices.

A. J. Heard, Wellston, Ga.

With----

J. L. Byer at Binbrook

How a college graduate got the corners knocked off in the apiary; how they secured an average of 200 pounds per colony for 410 colonies; how they lost 12,000 pounds of honey; how unimportant the hive is in securing big yields—is all told by Mr. A. A. Werner in the February issue. Mr. Werner is a graduate of the beekeeping department of the Ontario Agricultural College at Guelph.

Read the February Issue

Gleanings in Bee Culture

EDWARDS METAL ROOFS

Make Your Money Go Farther

Save the middleman's profit by buying direct from us at factory prices. Get better quality, lasting satisfaction. We own our own sheet mills, roll our own sheets, control every operation from the raw material to the finished product.

EDWARDS "REO" METAL SHINGLES look good, outlast three ordinary roofs. No painting or repairs. Guaranteed fire-proof, rust-proof, lightning-proof. Easy to put on. We also sell V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, **Ready-Made Steel Garages, Farm Buildings, etc.**

GET OUR FACTORY PRICES

By buying direct from us you save money, get better value. We are the largest manufacturers of metal roofing in the world. Thousands of satisfied customers every year are our best advertisement.

FREE SAMPLES & Roofing Book

Write today! Get our wonderfully low prices, lasting satisfaction. Ask for Roofing Book No. **189** or for Garage Book.

THE EDWARDS MFG. CO.
1233-1283 Butler St.
Cincinnati, Ohio

American Poultry Journal

Oldest, Largest and Best
3 MONTHS FREE

All **ONE, TWO** or **FIVE year** subscriptions received before Dec. 31st will be entered to commence with the January issue, and the Oct., Nov. and Dec. issues of this year will be mailed **FREE.** Order today and get them.

1 Year 75c. 2 YEARS $1 5 Years $2.00

Averages over 100 pages per issue. Tells how to feed, house and breed; how to secure high egg production; how to hatch and rear poultry successfully. 4 months trial subscription 25c. American Poultry Journal, 623-623 Plymouth Ct., Chicago

ROSES of New Castle

Are the hardiest, sturdiest, freest blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a lifetime experience and the most select list in America. Our stock also includes Cannas, Geraniums, Chrysanthemums, Dahlias, Phlox, Peonies, Ferns, Gladioli, Cyclamen, Perennials and Hardy Shrubs.

Our rose book for 1926, ROSES OF NEW CASTLE, tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do. Address

Heller Bros. Co., Box 118, New Castle, Ind.

KITSELMAN FENCE

"Saved $12 on 120 Rods," says J. T. Halterman, Rose wood, Ohio. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free Catalog of Farm, Poultry and Lawn Fence, Gates, Steel Posts and Barbed Wire.

KITSELMAN BROS., Dept. 21 MUNCIE, IND.

CHICKS $10 Per 100 BOOKS ORDER

Balance few days before shipping. Our **low prices** are causing a sensation. 12 kinds. ACCREDITED. **Big, instructive, illustrated catalog free.**

Colonial Poultry Farms Box 914 Pleasant Hill, Mo.

Best Poultry Paper

Showing Champions in all Breeds and Full Page Art Chicken Pictures, natural colors, suitable for framing, FREE with several issues during year.

3 Months' Trial 15c
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Monthly 80 to 120 pages. Practical articles by foremost poultrymen. **1 yr. $1; 2 yrs. $1.50; 3 yrs. $2.**

Poultry Tribune, Dept. 19 Mt. Morris, Ill.

Write for Book Today

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

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QUALITY
BEE SUPPLIES

are everywhere

The matter of serving beekeepers everywhere with Root Quality Bee Supplies has been given a great deal of thought. Our branches and big dealers are so located that they can give the best service possible, capable of making shipment within 24 hours after receiving the order and on important rush orders to give almost perfect service. Root dealers, large and small, located everywhere, are noted for their high-grade service. Therefore, if you want service and quality, order Root goods from the dealer nearest you.

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121 Central Ave., Leonia, N. J.

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A. I. Root Co. of Philadelphia,
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The I. W. Scott Co.,
500 Liberty Ave., Pittsburgh, Pa.

Schenectady Bee Supply Co.,
Schenectady, N. Y.

Zack Davis Company,
Delaware, Ohio.

A. W. Yates,
3 Chapman St., Hartford, Conn.

Dr. F. A. Young,
235 N. Canal St., Delphos, Ohio.

The A. I. Root Company, Medina, Ohio

Superior Package Bees

The bees we sell in packages are produced by us especially for packages. Our colonies are never allowed to become strong, as we start taking the bees before they are very old and pull from each colony every week, so as to give you the best there is to be had.

GET OUR ILLUSTRATED CIRCULAR

Cypress Bee Supplies

Let us show you how much we can save you on your Hive Bodies, Supers, Frames, Foundation or anything you might want. Ten-frame bodies, in lots of 50, 60c each. Ten-frame bodies, with frames, $1.00 each. White pine Hoffman frames, per 1000, $45.00.

The Stover Apiaries

Tel. Sta. and Ship. Point, Mayhew, Miss. Tibbee Station, Miss.

Queens
Package Bees

Avoid the rush by ordering now and your shipping date will be reserved.

Write for my new 1926 descriptive list.

Hayneville Apiary Co.
W. E. Harrell, Prop.
Hayneville, Alabama

STRAWBERRY PLANTS

Strong, healthy, tremendous bearing stock. World's greatest new everbearing strawberry **MASTODON**

GRAPE PLANTS

Large supply at low prices.

FRUIT TREES

Apple, peach, plum. All hardy northern grown. Full line of Blackberries, Raspberries, Currants. Mary Washington asparagus at $10.00 per 1000. All at wholesale prices for finest plants grown. **Free Catalog.** Write today.

F. C. STAHELIN & SON, Box 12, Bridgman, Mich.

Before Buying Your Bees

Please write us for our low discount prices during January on choice pure Italian bees with select untested choice young queens. We also give FREE a one-frame nucleus with every package ordered during January. Have you ever been disappointed by having your shipments delayed for days, perhaps weeks, receiving them just about when the main honey flow was over, also receiving them in bad condition? If so, kindly give us a trial. We guarantee prompt and safe delivery, satisfaction, bees inspected, no diseases. Years of experience shipping bees SUCCESSFULLY in the United States, Canada, and Cuba.

The Louisiana Modern Apiaries
Bunkie, Louisiana.

Queen Talks

M. J. DEYELL, Apiarist.

THE VALUE OF QUEENS THAT PRODUCE HARDY BEES.
(Talk No. 4.)

One meaning of the word "hardy" is "capable of endurance, able to withstand the cold of winter." This characteristic when applied to bees is extremely important, and especially so to beekeepers in northern latitudes where bees are confined in hives through long periods of extreme cold.

Very little work has been done along the line of testing out the different races and strains of bees for degrees of hardiness. It would be interesting to know the answer to the question often asked, namely, "Do northern-bred queens produce hardier bees than southern-bred queens of the same race and strain?"

It seems to be a fact that certain strains of Italian bees will winter better than others. For almost 60 years we have been breeding queens with all of the desirable traits constantly in view, including hardiness.

If interested in Root "QUALITY" queens and package bees for early spring delivery, write for our free booklet entitled "Combless Package Bees," which fully explains how to obtain maximum results, also our leaflet entitled "How to Take Care of a Shipment of Bees in Root Bee Shipping Cages."

The A. I. Root Company
MEDINA, OHIO

CANDY FOR WINTER

When packing your bees be sure and give them some of this candy. Just what you need for colonies short of stores. Put up in convenient form, easily and quickly placed in hive. A trial will convince you. Send for circular and price.

H. H. JEPSON

237 Park St. Medford 55, Mass.

Bright Italian Bees

I guarantee prompt shipments and safe delivery. Health certificate furnished. Have had no disease during the fourteen years in this location.

1 2-lb. pkg. with untested queen, $4.00
10 2-lb. pkgs. with untested queen, 35.00
25 2-lb. pkgs. with untested queen, 80.00
Queens, each 1.00

Prices furnished on larger lots and on 3-lb. pkgs. 10 per cent with order.

M. Stevenson
WESTWAGO, LOUISIANA.

JENSEN'S APIARIES

Now booking orders for spring delivery of BEES and QUEENS. Satisfaction assured when you place your order here. Let us quote you on your requirements. We are even better prepared than ever before to supply you.

2 pounds Italian bees and untested, purely mated queen, $3.50 each; 25 or more packages, $3.00 each.

3 pounds Italian bees and untested, purely mated queen, $4.50 each; 25 or more packages, $4.00 each.

Two and three frame nuclei with young tested queens, $4.50 and $5.50 respectively, 25 or more, deduct 50c each.

QUEENS—OUR PRIDE

Untested 1 to 10, each, $1.10; 11 to 25, each, $1.00; 26 to 50, each, 90c; 51 to 100, each, 80c; all upward, 75c each. One grade only; the best we know how to produce. Tested, $1.50 each.

Package bees supplied with sugar-syrup in transit. Quens introduced but not liberated. We have never had any disase here. Health certificate with all shipments. Terms: 10 per cent to book, balance just prior to shipping. We guarantee safe arrival and prompt service.

JENSEN'S APIARIES
CRAWFORD, MISS.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1926

Untested queens, $1.00 each. Tested, $1.50 each. 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50; nucleus, $1.50 per frame. Additional pound of bees with nucleus, $1.00. No disease; safe arrival guaranteed; bees inspected; never had disease.

J. W. SHERMAN, VALDOSTA, GEORGIA

Package Bees, Nuclei and Queens for 1926

A good strain of Italian bees, unsurpassed as honey-getters. Special equipped combless packages that offer the best in delivery, which is duly affirmed by customers. Bees inspected, no disease. A square deal, safe delivery, and satisfaction guaranteed. If in the market for bees write for prices. They are reasonable and will interest you.

York Bee Company
H. F. YORK. JESUP, GEORGIA

Does It Pay?

Bunkie, La., Dec. 5, 1925.

Gleanings in Bee Culture,
Medina, Ohio.

Gentlemen:—We are writing to you to let you know of the wonderful results we have had from our advertisement in Gleanings in Bee Culture. Your magazine sure pulls not only the inquiries but the orders.

Several years ago we sent you a small advertisement costing us about $2.95 for the classified department of Gleanings. From this small advertisement we received orders for two thousand and four hundred dollars ($2,400.00). We also received many inquiries on which it was necessary for us to decline quoting them prices because at that time we were booked up to capacity. No doubt those inquiries would have brought us many more orders. We were more than pleased with results of all other advertisements.

We want also to take this occasion to tell you that we appreciate the many things you have done for beekeeping. May the best of luck follow you in your enterprises.

THE LOUISIANA MODERN APIARIES,
M. Voinche, Prop.

Easy to get!

YOU have heard how Canco decorated honey pails have proved their value—how they have helped beekeepers win prizes at State Fairs—how they increase sales and stabilize the user's distribution.

They are also easy to get. Whichever of these distributors you are accustomed to deal with, can furnish you samples and prices—and pails in quantity on short notice.

Colorado Honey Producers Association, Denver, Col.
Dadant & Sons, Hamilton, Ill.
G. B. Lewis Company, Watertown, Wis.

10 Tivoli Street, Albany, N. Y.
1304 Main Street, Lynchburg, Va.
23 W. 3rd Street, Sioux City, Iowa
318 E. Broad Street, Texarkana, Ark.

B. F. Smith, Jr., Fromberg, Mont.

It's not a bit too soon to plan for next season. Write to your distributor today. Or if more convenient, write to any of the Canco offices listed. Your inquiry will get prompt attention.

Samples and details on request

American Can Company

NEW YORK CHICAGO SAN FRANCISCO HAMILTON, ONT. PORTLAND, ORE.

American Can

CONTAINERS OF TIN PLATE · BLACK IRON · GALVANIZED IRON · FIBRE

TRADE CANCO MARK

Running's Bees and Queens

ITALIANS THAT ARE HONEY-GETTERS

We are now booking orders for 1926 delivery. Shipping begins April 1. We have been producing package bees in the South for six years and have one of the best package and queen-rearing establishments in the South, and have been producing large crops of honey in Michigan for 26 years.

WE HAVE THE STOCK AND KNOW THE BUSINESS

Try one or a hundred and you will want more. They get the honey. We want to show you. Bees and Queens shipped from Epes and Sumterville, Ala. Our prices are right, stock unexcelled and service guaranteed. Write for prices, stating how many you can use.

David Running
Filion, Mich.

AFTER JAN. 1, SUMTERVILLE, ALA.

Beekeepers

Get Our Prices on Package Bees and Queens before Placing Your 1926 Order

We are prepared to give prompt service. Queen output will be about 400 queens per day after April 1. Let us quote you delivered prices by mail or express. Bees inspected, no bee disease here.

Citronelle Apiaries
CITRONELLE, ALABAMA

MAYEUX'S PURE-BRED QUEENS AND BEES

Shipped on comb or combless. Guarantee safe delivery. Early shipment if desired. In two, three, four, and five pound packages.

One two-pound package.....	$ 4.25
Ten two-pound packages....	38.00
25 two-pound packages.....	85.00

Write for prices on larger lots. 10 per cent with order required.

H. J. MAYEUX
METARIE RIDGE, JEFFERSON PARISH, LA.
BOX 65 C. C.

Italian Bees

Honey Girl Strain

We take this opportunity to thank our customers for their valued orders the past season.

The value of orders delivered during the season of 1925 was double the value of orders delivered in 1924. Besides these large deliveries we had to return orders for hundreds of packages. This heavy demand for our Honey Girl Bees and Queens is our best recommendation.

We increased our apiaries and added to our equipment to enable us to make larger and earlier deliveries this year.

We are now breeding from the progeny of two of the best queen daughters of St. Romain's Honey Girl that were tested for queen mothers. One, Conrad's Honey Girl, a record honey-producer for two seasons and average producer the third. As a queen mother we consider this queen a close second to her mother. The other, 20-comb Honey Girl, a queen that developed to an unusual egg-producing capacity, and had twenty standard Hoffman frames practically filled with brood. One queen daughter of this breeding queen developed to same capacity. Her progeny are wonderful honey-producers.

We are wintering several hundred pedigreed, selected queens. There should be many choice breeding queens in this lot. The best at $10.00 each; second grade at $8.00 each; shipped by express with two-pound combless package or with nucleus of one frame brood—one pound bees.

Package bees shipped combless with candy made with inverted sugar syrup, or on comb with natural stores as desired or as required by your state law. All comb shipments certified free from diseases by State Certificate of Inspection. Loss or damage in transit replaced promptly on receipt of express bad order delivery receipt with proper notation, which should be mailed to us immediately. All prices quoted F. O. B. our shipping point.

These prices include an untested Honey Girl Queen with each package.

	1	10	50	100
3-lb. package...	$4.50	$42.50	$205.00	$400.00
4-lb. package...	5.40	51.50	250.00	490.00

To secure order in advance send 20 per cent of purchase price with first letter, balance to reach us fifteen days prior to date order is booked for shipment. For order amounting to more than $500.00 send deposit of $100.00 with order, balance as above.

Honey Girl Apiaries
Hamburg, Louisiana

Achord Bees and Queens for 1926

Shipments start April 20th. Order now to secure early shipping dates. Pure three-banded Italians only.

2-lb. pkg. with select young laying queen.$4.75
Five 2-lb. packages..... 22.50
Twenty-five 2-lb. packages.....112.50
5-lb. pkg. with select young laying queen 5.75
Five 3-lb. packages 27.50
Twenty-five 3-lb. packages.....137.50

Express charges collect at destination. Safe arrival guaranteed. Inspection certificate and all necessary papers to carry packages through without delay. If packages are wanted by parcel post, add 15c and postage to the price of each. We will advise you cost of postage to your postoffice. If wanted without the queens, deduct $1.00 from the price of each package.

Queens

Select young laying queens, $1.00 each, any number. Tested queens, $1.75 each, any number.

Terms, 20 per cent with order, balance a few days before shipment. No bees sent C. O. D. Producing and shipping package bees and queens has been our sole business for many years. We have passed the costly and dangerous experimntal stage. Your order placed here brings highest value for the money invested. For complete information send for latest price price.

W. D. ACHORD, Fitzpatrick, Ala.

Package Bees and Queens for 1926

Three-band Italians. The gentle, hardy, prolific kind, that gets the honey. 900 colonies to draw from, 1000 nuclei. We have thousands of satisfied customers throughout the States and Canada, and not one complaint has been made to bee journals during the six years we have been in business. We have been in the bee business for thirty-five years. Our losses last season were less than two per cent. We guarantee safe delivery, freedom from disease, and satisfaction, the purchaser to be the judge. Let us quote prices on your needs for the coming season.

J. M. Cutts & Son
R. F. D. 1, Montgomery, Ala.

IF YOU EXPECT TO BUY POUND PACKAGES

DO NOT COMPARE THESE FIGURES

UNLESS YOU ARE INTERESTED IN SAVING MONEY AND GETTING ALL YOUR DOLLARS WILL PURCHASE

John Smith bought 100 ten-frame hives of bees for $650.00.

Each hive composed of	Value.
1 10-fr. dovetailed body	$ .80
1 10-fr. bottom	.70
2 lbs. bees and queen	4.00
10 drawn Hoffman frames	2.00
5 fr. brood should hatch 20,000 worker bees	4.00
Total value each	$ 11.50
Total value 100 hives	$1,150.00
Paid	650.00
Net profit	$ 500.00

Bill Jones bought 156 2-lb. packages of bees with queens for $650.

Each package of bees.	Value.
No 10-fr. body	$ .00
No 10-fr. bottom	.00
2 lbs. bees and queen	4.25
No 10-fr. drawn comb	.00
No brood to hatch	.00
Value each	$ 4.25
Total cost 156 pkgs.	$650.00
Paid	650.00
Net profit	000.00

So John Smith gained some $500.00 in real value, also 600 lbs. of bees to Bill Jones' 312 lbs. Did it pay?

Guaranteed safe delivery to ports of New York City or Baltimore, Md., at following prices: 10-fr. hive with untested Italian queen, in lots of 10 to 25, $7.00 each; 26 to 50, $6.75 each; 51 to 100, $6.50 each. Tested queen, 50 cents per hive extra.

No orders accepted for less than 10 colonies at these prices. NO FOUL BROOD IN PORTO RICO. Booking orders now for spring delivery. 20 per cent books your order. No orders filled which are post marked later than March 15, 1926.

THE TROPICAL APIARIES, AIBONITO, PORTO RICO

PENN G. SNYDER, PROPRIETOR.

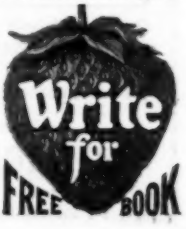
$1800 from ONE ACRE of STRAWBERRIES

This is George Beaudette, of Michigan, who made $1800 from one acre of Kellogg Thorobred Plants grown the "Kellogg Way." Big profits from famous Kellogg Strawberries come easy when you know how. Jacob S. Rodgers, of Pennsylvania, made $1700 on one acre; H. M. Hansen, Wisconsin, $1400; G. M. Hawley, California, $1500; and H. A. Wysong, Indiana, $1200 on a half acre. You can make more money from one acre of Kellogg Strawberries than from 40 acres of common crops.

Free Berry Book Tells How

It will show you how and PROVE you can make twice the profits from Kellogg Strawberries than from any other crop. Hundreds of others are making these nice profits and you can do the same. You furnish the land, I'll furnish the plan. My method is simple and easy. Folks with a garden or backyard can turn it into a "Strawberry Gold Mine" and easily make $100 to $300 cash profit. My FREE book, "Great Crops of Strawberries and How to Grow Them," tells all about it. Every beekeeper should read this money-making book on Strawberries. I'll send it FREE to every reader of Gleanings in Bee Culture on request. Write for it and read the true stories of big crops and big profits others are making. Send a postcard today.

F. E. BEATTY, President.



R. M. Kellogg Co., Box 2624, Three Rivers, Mich.